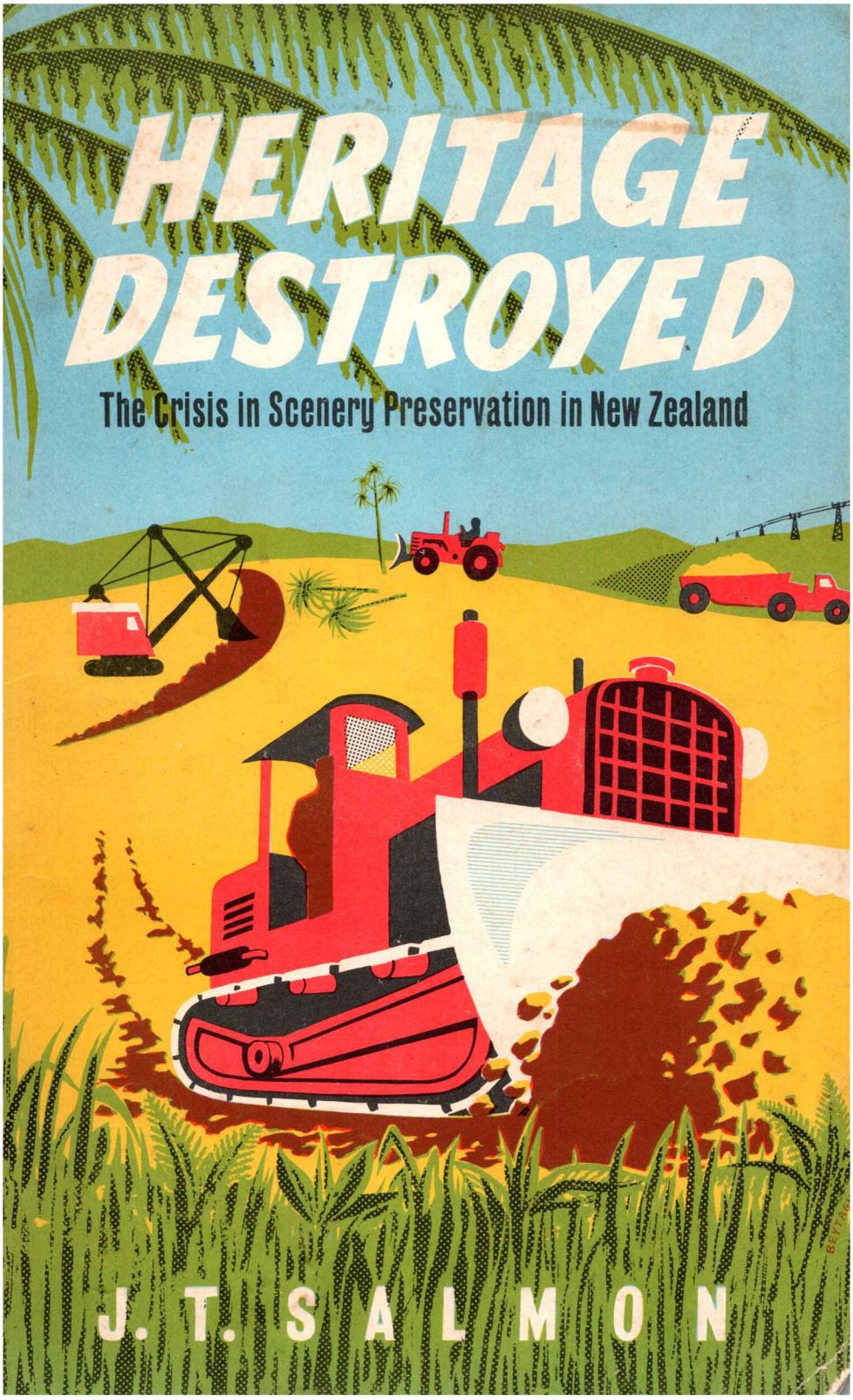
HERITAGE DESTROYED

The Crisis in Scenery Preservation in New Zealand



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HERITAGE DESTROYED

The Crisis in Scenery Preservation in New Zealand

"The view stinks but it's worth millions."

Heritage Destroyed

THE CRISIS IN SCENERY PRESERVATION IN NEW ZEALAND

by

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Pity the thought, is this the price we pay,
The price for progress, beauty swept away?
William Pember Reeves

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FOREWORD

THIS BOOK is concerned essentially with a new phase in the development of our nation. John Salmon, D.SC., F.R.S.N.Z., is recognised world-wide as an authority in the special fields of his researches in entomology. Throughout his life he has been truly appreciative of the natural beauty of this country. His researches have taken him to all wilderness areas in New Zealand.

As a New Zealander, Dr Salmon has known a land in which some 69,000 square miles had been converted in the brief span of 100 years from native forest and other natural beauty to agricultural purposes. This was first a pioneering phase, and done with an excusable ignorance of such consequences as we see now in many areas which now show a level of ecological instability having little parallel in other parts of the world.

There remained some 30,000 square miles of land unsuitable to agriculture. This is the New Zealand of rough mountain ranges with lakes, rivers and native forest. A new phase of industrial development with its need for hydro-electric power, transmission lines and spreading roads invades the area which has been the wilderness area for Dr Salmon and his generation. He now makes his case that the utilisation of this remaining area should not be undertaken with any indifference to consequence as in an earlier pioneering phase. Future generations will neither forgive nor forget unnecessary destruction brought about by the transitory expediencies of our times.

Dr Salmon has not written this book lightly. It is written with the strength of his belief, in full sincerity and from his understanding of the many values of our wilderness. It is based on his knowledge of these matters drawn from his life-long experience of this country, linked with many years of concern and study, supported by his extensive personal enquiries into the ways in which mature nations overseas have handled similar developments but still retained a natural wilderness beauty for further generations to enjoy.

This nation is described as prosperous and with a high standard of living. Its people are claimed to be educated. The reception of this book will be a test of the level of our maturity. If we are in fact a mature nation, this book will be recognised, accepted and acted on, in terms of the intention with which it has been written.

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Victoria University of Wellington
August 1960

PART ONE

OUR VANISHING WILDERNESS

ABOUT ONE HUNDRED AND FORTY YEARS AGO, when the first European settlers arrived in New Zealand, they found themselves in a land of unrivalled beauty, clothed with luxuriant forests and prolific with the bounty of Nature. During the processes of European settlement and development it was inevitable that much of this original wilderness beauty should disappear before the axe, in fire and under the plough. But even today, with what is left, we have in New Zealand the most concentrated area of wilderness with scenic appeal to be found anywhere in the world.

It consists of such scenic assets as mountains, forests, lakes, rivers, coasts and beaches, thermal activity, caves and all the consequential human activities that combine with this wilderness to bring refreshment to the body and mind of man. Such things as tramping in the mountains, swimming in lakes or sea, skiing, fishing, or just plain sightseeing are the privilege of New Zealanders to enjoy without limit, all within the compass of a few hundred miles. These are the things which my father's generation of New Zealanders regarded as our natural heritage, the national heritage of New Zealand, but today there are amongst us people who would destroy these things and sweep them aside in the impressive name of progress.

The Ideal of Conservation

During the early period of settlement, farsighted citizens and statesmen who believed that some, at least, of the most interesting and beautiful areas should be preserved for the benefit of future citizens then unborn, set aside, often at great cost and effort, suitable areas as scenic reserves. The ideal behind their actions was that these places should be conserved for all time, in their primeval condition, for the inspiration, education and enjoyment of the future citizens of this country. Later, in more recent years, following the lead given by the United States of America, the national parks idea took root in New Zealand and to date some

nine National Parks have been set aside to *preserve in perpetuity, for the benefit and enjoyment of the public, areas of New Zealand that contain scenery of such distinctive quality or natural features so beautiful or unique that their preservation is in the national interest.**

Today, in spite of official assurances to the contrary, we see these places being systematically plundered and destroyed, not so much by the citizens of New Zealand, but by Government and Government agencies. The State Electricity Department, for example, leaves a trail of desolation, disfigurement and destruction almost everywhere it moves. The Ministry of Works, under the guise of "better roads" is mutilating scenic reserves and scenic assets in a wanton, unnecessary fashion from one end of New Zealand to the other.

Our scenery is one of our natural resources and its preservation in the natural state is one facet of the overall practice of conservation. The wilderness areas and natural resources of the present time are not the absolute property of our generation to dispose of as we please; as the present occupiers of this land we have these things in trust; we must account for them to our children and to those who, in their turn, shall come after them.

No Official Acceptance

This philosophy of conservation, though accepted as good and put into practice within the last sixty years in almost all civilised countries, has never received official acceptance in New Zealand. Most countries have officially accepted this idea of trusteeship and recognised the necessity for the preservation and development of wilderness areas for public recreation by the establishment of conservation bodies, the enactment of laws aiming at the conservation and the preservation of wilderness and other natural resources, by the teaching in their schools of the need for, and the meaning of, conservation, and by the establishment of extensive national park systems.

New Zealand, by comparison, has no overall conservation authority, few conservation laws, does not teach conservation of natural resources in her schools, and has only a small national park system, which is largely undeveloped, unpatrolled and almost completely unprotected.

* Italicised portion quoted from the National Parks Act 1952.

New Zealand's scenic reserves, the greater proportion of which are the responsibility of the Department of Lands, are relatively unprotected also. Except for those few that are cared for privately, they are mostly unkempt, sprouting with weeds and damaged by browsing animals, often used by local residents as rubbish dumps and by passing motorists for toilet purposes. Lack of suitable signposting often makes it difficult for interested citizens to know whether they are in either a national park or a scenic reserve. The scope and, therefore, the boundaries of these places are largely unknown.

True, we have in this country certain very admirable laws aimed at the protection of our native birds, native plants, and the control of accelerated erosion through the soil erosion and rivers control legislation, but these laws only touch the fringe of the conservation problem. What conservation laws we have are administered in an unco-ordinated fashion by seven different Government departments, by three Government agencies (the Soil Erosion and Rivers Control Council, the National Historic Places Trust, and the National Parks Authority), together with numerous acclimatisation societies – all operating under fourteen different Acts of Parliament.

The sanctity of any conserved area, be it national park, scenic reserve, or historic reserve, can be violated at will by the State acting under Sections 7, 32 and 39 of the National Parks Act, under Sections 16, 34 and 97 of the Scenic Reserves and Domains Act or, if either of these avenues by any mischance should fail, under Sections 13(a), 311 and 312 of the Public Works Act. Neither Parliament, nor, least of all, the public at large, need be informed of what is proposed to be done. The first they know is, all too often, heralded by works activity or accomplished fact.

Public Apathy

Little wonder, then, that we find in New Zealand a public largely ignorant of the purpose and the meaning of conservation and, therefore, totally apathetic regarding what happens to their national heritage at the hands of their paid servants. The great scenic spectacles of this country are being torn from under our very noses, plundered, devastated and ruined by the bureaucracy of the Ministry of Works and its allies, without regard to public conscience, public protest, or overall public requirements.

Apart from the appalling damage being inflicted upon our

scenic reserves all over the country by road-making activities of the Ministry of Works—particularly, as this book is written, in the central districts of the North Island and on the West Coast of the South Island—we have already lost, or had severely spoiled, in the quest for electric power, such wonderful scenic assets as Lake Waikaremoana in the north, and in the south Lake Monowai, Lake Pukaki, Lake Tekapo and Lake Hawea.

In the development of geothermal steam power the world-famous Geyser Valley at Wairakei has virtually disappeared as such, along with the wonderful Waiora Valley, while the Waiotapu thermal area is at present being interfered with for the same purpose. At this time also the Aratiatia Rapids and the Huka Falls are in the process of being converted to hydro-electric power generation and will virtually cease to exist after 1964 as scenic spectacles. At about the time this book is published the delightful and fascinating thermal area of Orakei Korako will be submerged under the waters of the Ohakuri Dam on the Waikato River.

Scheduled for development in the near future, for electric power purposes, are Lake Manapouri, Lake Te Anau, Lake Ohau, Lake Wanaka and, probably, Lake Hauroko and Lake Poteriteri in Southern Fiordland which are at present being investigated. Under the Kaituna scheme the scenic lakes of the Rotorua district are to be developed by juggling their levels with consequent despoliation similar to that which has already occurred at Waikaremoana, and other South Island lakes that have been utilised. Under the Mangles scheme the lakes of the Nelson district, Rotoiti and Rotoroa will no doubt be considerably interfered with and their scenic setting greatly spoiled.

Lack of Forethought

Quite a considerable trail of devastation and despoliation! And the pity of it all is that so much of the damage is wanton and unnecessary. Add to it the rows of power pylons and poles that spring up all over the country with little, if any, thought for the unsightliness caused by these ugly adjuncts to the electrical age. As examples of the lack of forethought and imagination on the part of the engineers concerned, consider the reticulation system that parallels the Desert Road from Waiouru to Lake Taupo, that which crosses Wilton's Bush and enters Central Park in Wellington, or that which strides blatantly through the alpine gardens in Arthurs Pass National Park.

The great problem posed by the damage being done to New Zealand's mountain vegetation by introduced browsing animals, many of which originated as political presents from the governments of other countries, is consistently ignored by our politicians. A rather unpleasant subject, not calculated to be of great political significance from a vote catching point of view, this matter is continually pushed into the background by our parliamentarians. The damage caused to our alpine plants, sub-alpine meadows and mountain forests by these animals is reaching immense proportions, and brings with it the ever increasing spectre of accelerated erosion of high country, aggradation of rivers and devastation by floods.

Add to this the ruin already brought about on all sides by the grazing of sheep and cattle on high country tussock lands, or by unrestricted sawmilling of protection forests in mountain regions, and we have New Zealand's No. 1 conservation problem, a problem which is only being tinkered with by the Government. The damage already caused to our mountain watersheds, besides spoiling the wilderness appeal of these places, has set the stage for future catastrophic flooding in New Zealand.

What happens in our mountain watersheds is of the greatest concern to every man, woman and child in this country, because it affects for good or ill, depending on how we handle this problem from now on, our climate, our agricultural prosperity, the safety of our riverside towns and cities, our hydro-electric stations; in short, our ultimate economic prosperity rests on the stability of our mountain watersheds.

These are some of the things which I propose to discuss in greater detail in the following pages of this book.

CONSERVATION AND WILDERNESS

The term "conservation" or, more properly, "conservation of natural resources" appears frequently in reports on development and in the writings of scientific people, but the average member of the public is often quite a little puzzled by what exactly is meant by this term.

Conservation means essentially "wise use", that is *wise use of our natural resources.* These resources are of two kinds, (a) irreplaceable and (b) renewable; the former including such things as soil, coal, oil and mineral wealth; the latter such things as forests

and other plant cover of the land, and most forms of animal life.

As man emerged from the savage to the more enlightened, civilised state, the idea of conservation was first applied to the soil upon which he depended for the growing of his crops. Primitive man, it would seem, was more conscious of his dependence on the soil than is his modern counterpart. We see, in such places as the Philippines, the terracing of hillsides to conserve soil and moisture for agricultural purposes. Later, forests, and then game animals, were conserved mainly for the privileged use of monarchs and powerful land owners.

"Rape of the Earth"

With the development of the industrial age in western civilisation came exploitation of the earth's resources, on a vast scale never before equalled in human history. Farseeing men in many countries raised their voices in protest against what came to be called "the rape of the earth" and began urging, and implementing, more sound principles of conservation. In the more enlightened lands their ideas took root and from them has developed the modern concept of conservation.

Today, conservation ranges over almost the entire human environment to establish, not only the wise use of non-renewable resources, but also to protect Nature and to cater for the aesthetic, cultural, and physical well being of mankind.

Within the idea of conservation lies also the idea of preservation. Animals were first protected and conserved for the hunter, but later, in many countries, under conservation laws, animals and then plants came to be protected and conserved for their own intrinsic scientific, cultural or aesthetic values. Finally, in the evolution of conservation practices, came the recognition of the place of beauty in the enjoyment of men's lives, and so we find scenery, outstanding natural objects, and the works of ancient men, conserved and preserved for the pleasure, refreshment and education of all peoples. More recently, the most outstanding of modern man's own works, particularly in the architectural sphere, have received some measure of protection under conservation laws in many countries.

In the modern civilised society, depending in large measure on the awareness of its people, we find indigenous plants and animals of any given region being protected, under the law, from unnecessary exploitation and slaughter along with the recognition

and protection of such amenities as scenic reserves, natural monuments, national monuments, and national parks. National parks, at their best, represent the highest practical expression of conservation principles. While catering for the scientific, aesthetic and wilderness enjoyment of men, they provide, at the same time, that their natural features shall be handed on from generation to generation *undamaged and unspoiled by human agency.*

Exploitation v. Conservation

While conservation, therefore, is largely a problem of use, it is also very much a cultural problem and it is not always easy for those in authority to decide between full exploitation, on the one hand, and conservation, on the other hand—especially so when conservation principles properly applied indicate complete preservation. This is particularly so in New Zealand because we have no properly constituted conservation authority to advise Government. Those in authority in New Zealand today are dependent for advice upon an assemblage of State departments whose policy is tuned entirely towards complete economic exploitation of every available natural resource, as rapidly as possible.

Conservationists are concerned with problems pertaining to maintenance of soil fertility, prevention of accelerated soil erosion, the maintenance in their natural state of protection forests in high country, flood prevention and control, stability of underground water tables, the utilisation of water supplies, the protection of wild animals generally, including soil inhabiting organisms, the eradication of pests damaging to protective vegetation; in short conservationists are concerned with the proper maintenance of the balance of Nature, both biologically and physically, while at the same time permitting utilisation, so far as is possible, by man, for his economic advancement. This, of course, involves the protection of scenic assets, natural phenomena, and natural spectacles, for man's benefit and enjoyment, as well as outstanding works of man himself. As industrialisation spreads, the conservationist will, of necessity, have to turn his attention also to man himself in what might be termed social conservation, to save man from becoming a victim of his own industrial civilisation.

Meaning of Wilderness

Wilderness as applied to conservation and recreation is a term

new to New Zealand. *It implies those areas of our environment that remain in their wild or natural state, unharmed, or still largely unchanged, by human encroachment and activity.* It embraces the whole of man's natural surroundings in contrast to his civilised or artificial abode.

Wilderness is expanse, which encompasses the entire environment of living and inanimate things, and the beauty of Nature, inviting men to adventure, inspiration and refreshment of both body and mind together. *Wilderness* reflects the artistry of Nature, the perfection of the earth, its waters, its rocks, its floral mantle, and the ebb and flow of its wildlife. *Wilderness* is the brilliance of sunlight, the softness of moonlight, the grandness of solitude and the music of open spaces.

These are things which many New Zealanders appreciate as individuals, but, through apathy and neglect as a community, we are in imminent danger of losing. We have already, in the past 100 years, lost much of our wilderness beauty and today we are in urgent need of a stock-taking of the position. New thinking, combined with a forward looking policy on the entire question of conservation, including scenery preservation, is required.

The protection and preservation of what remains of New Zealand's scenery is a problem of vital importance to every citizen of this country. It is a problem which can no longer be shelved by those in authority. Disinterested members of the community can no longer afford to say, "It doesn't concern me", or "Let's leave it to the other fellow". It is precisely this policy of "leaving it to the other fellow" that has paved the way for the creation of our present State bureaucracy, and led directly to the impending destruction of such spectacles as the Aratiatia Rapids on the Waikato River, or the Geyser Valley at Wairakei and to the despoliation of so many of our beautiful lakes.

The time has now arrived when all New Zealanders, as a community, must decide whether the remaining great scenic assets of this country, which our fathers' generation regarded as our national heritage, are to be swept away by the growing wave of industrial development, or whether these places are to be selectively preserved for the benefit, inspiration, education and enjoyment of future generations of our countrymen.

Preservation of Environment

Certain measures of conservation are essential to preserve our

environment in order that we may continue to inhabit it indefinitely. North Africa and the Middle East abound with the mute evidence of passed communities which have perished because their inhabitants refused to practise even the rudiments of water conservation. Modern man, in spite of his presumed intelligence, is still the most destructive of all animals, and through his most recent industrialisation has already laid waste vast tracts of the countryside in the older countries. Most of these are now spending great sums of money in attempts to undo the damage wrought by industry.

Must New Zealand repeat these mistakes, or can we in this country profit by the experiences of others? No matter how great our industrial wealth may become we shall find as individuals that the deep satisfactions of living do not come from our technological achievements but from the simpler experiences of Nature.

Man was, still is, and always shall be, a creature of the soil and will continue to draw his most satisfying experiences from communion with Nature. To deny men the simple human desire for open spaces, water and sky, is dangerous—the preservation of what remains of our scenic assets in New Zealand is a matter of considerable concern to all of us. These things represent part of the original New Zealand, which our forefathers regarded as a national heritage, and which we, as the present tenants of this land, should hand on unspoiled to those destined to follow us, for their education and enjoyment. In advanced countries it is now realised that formal education of youth as supplied by schools, colleges and universities, and the slightly less formal but continuing education of adults, through university extension services and learned societies, still leaves an unsatisfied void which can be reasonably well bridged and filled, as it were, by a return to the earth, to wilderness, and all it has to offer to the mind and spirit of men. The cultural and aesthetic uplift imparted, through individuals, to a community, by wilderness experience, is very considerable indeed and of great educational value. To cater for this almost insatiable appetite for knowledge, and for the benefit of science generally, the selective conservation, protection and preservation of wilderness areas, natural scenic spectacles, or monuments, is a very real and urgent necessity in New Zealand.

CONSERVATION – THE ECONOMIC AND CULTURAL ASPECTS

Conservation is not a negative attitude to economic advancement; nor are conservationists simply sentimentalists, seeking to block the economic progress of New Zealand and to maintain a kind of status quo in an open-air museum. We must have electric power and industry in New Zealand if our country is to continue to advance in a technological world. At the same time we must realise that the rapidly increasing population of New Zealand will, in the future, require increasing outdoor recreational areas of all types. Furthermore, to maintain a stable, productive landscape, and to safeguard our natural resources and our national heritage, we need in this country the proper application of sound conservation practices.

These things are accepted policy and accepted practice in older countries. They do not stultify progress but rather enhance it by looking forward to provide, not only for the economic, but also for the cultural and aesthetic, requirements of populations. These are just as necessary as economic requirements if a people is to develop, and survive, as a nation. The conservationist, working with the engineer, can often indicate more satisfactory ways of utilising resources. Being concerned with future results rather than with immediate gains, the conservationist can direct the engineer towards methods of utilisation less likely to bring about irretrievable harm, and can often point to equally suitable alternative schemes that will produce the required results and, at the same time, preserve the wilderness scene.

Economic Progress Stimulated

The proper application of conservation principles can often stimulate economic progress. Strong evidence for this exists in Europe and North America, where forestry, working on the principle of continuous cropping of certain areas with trees, supports permanent thriving timber industries, marketing indigenous timber from those countries. The application of sound conservation principles to the fishing industry inevitably places this industry on a sounder economic basis wherever it has been tried. Conservationists saved the northern fur seal from extinction and enabled the present thriving industry to develop.

In the same way conservationists have demonstrated, both in Europe and North America, that the landscape does not need to

be torn apart to develop electric power or other heavy industrial projects. By applying the biological principles of conservation, and the science of landscape architecture, they have shown that the natural beauty of the countryside can be preserved, and sometimes enhanced. In the latter case, the lateral river canals of France are an outstanding example of the use of vegetation to stabilise man-made waterways, and to create places of great beauty. With their wonderful stands of woodlands along their banks, these navigable canals appear as natural parts of the valley landscapes, and are world-famous for their beauty.

Industrialists and those amongst us who would exploit the natural resources of a country are noted, the world over, for their ability to exaggerate, often grossly, the economic gains and profits to be realised from their proposed enterprises, while at the same time playing down or ignoring the cultural and economic losses likely to arise in other directions from their activities. The present proposals to develop an aluminium smelting industry in New Zealand, based on power derived from Lakes Manapouri and Te Anau, are an outstanding example of this sort of thing. Similarly the current proposals being canvassed by the Electricity Department for the impoundment of the entire Wanganui River behind a dam at Parakino, fall into this category. Mr Hanan, the Member for Southland, writing in the Christchurch *Press* during November 1959 claimed that the Manapouri scheme as proposed would produce more power than the combined outputs of all the power stations operating in New Zealand –North and South Island, hydro, coal and geothermal. Reference to the *New Zealand Official Year Book* indicates that this scheme will generate about one quarter the amount of electricity at present produced by all other stations in New Zealand.

Combined Planning

Engineering is the correct application of science for the welfare of man. To carry out its purpose to the fullest extent, all aspects of every project must be considered from the initial conception right through to completion. Scenery preservation is but one facet of the overall practice of conservation, and it would get proper consideration in engineering projects in New Zealand, such as hydro-electric works, if they were carried out by engineers in co-operation with conservation experts.

Besides its use as a source of electric power, the water resources

of a river may be developed, under combined planning, for such purposes as irrigation, domestic and industrial use, flood control, recreation, transport by navigation, and fish or other wildlife preservation. In an agricultural country such as New Zealand, especial consideration must be given in dam building to the possible effects of impoundment of water upon ground water levels and water tables, erosion, and the loss of arable land and other assets through inundation.

In a paper presented to the 1952 International Conference on "Hydro-electricity and the Protection of Nature", convened by the International Union for the Protection of Nature at Caracas, Dr Max Mueller, soil conservationist to the Snowy Mountains Hydro-electric Authority in Australia, pointed out that, in older countries a compromise between the utilisation of a water resource for electric power production and a wise observation of the natural limitations, as imposed by Nature, cannot be avoided.

This was eight years ago: yet, in New Zealand, we still continue to exploit sites for electric power development to the maximum, without any consideration of conservation principles. This type of interference with the biological patterns that constitute Nature's balance, disturbs an equilibrium that cannot be upset with impunity, and New Zealand will pay dearly, in the next 100-200 years, for the mistakes that are being made today in the utilisation of our water resources.

The New Zealand Scene

While it is true that hydro-electric works can be so designed and executed as to indirectly bring about an enhancement of the local scenery, no such thing has ever been accomplished in this country. An attempt was made at Karapiro but was never completed. A half-hearted attempt is being made at Aratiatia but this is a farce. Hydro-electric works already built, being built, or projected in New Zealand are designed and constructed as engineering works only, and no serious thought has ever been given to their impact upon the balance of Nature, let alone the scenery.

Much has been made in official circles of the "beautification" carried out by the Electricity Department in the vicinity of its power stations by laying out the precincts in lawns and plots of flowers. This, however, is no more than any self-respecting citizen would do in his own back or front garden and is not what I am referring to when I criticise the destruction of wilderness

and scenic attractions by the Ministry of Works and Electricity Department. If Whakamaru can be taken as a yardstick, John Citizen is generally much quicker putting his section in order with spade and wheelbarrow than the department ever is in spite of all its bulldozers and other labour saving equipment. What will be the fate of the Motu River gorges at present being investigated for hydro purposes? Will these be developed in conformity with conservation principles or will they simply be mutilated?

In the development at Ohakuri on the Waikato River it is, I think, only fair to record that the shore line of the new lake to be formed behind the Ohakuri dam has been largely cleared of vegetation in advance of the filling of the lake. This would appear to be a major step forward in understanding and policy by both the Ministry of Works and the Electricity Department, which, let us hope, will remain thus enlightened in the future.

Road construction by the Ministry of Works takes little or no account of landscape architecture, which involves the blending of roadworks into the landscape so that both road and countryside are part of the same scheme. Our roads are, for the most part, simply hacked through the landscape to the accompaniment of masses of scarring and the wholesale mutilation and destruction of forest and other assets. No scenic reserve or national park is immune from this treatment from roadbuilders.

As witness to this, a trip at the present time down the West Coast of the South Island will reveal one scenic reserve after another being torn to pieces with bulldozers and other heavy machinery in the current craze for road straightening and widening, locally referred to as "up-grading". After this experience the world traveller, fresh with the memories of the lovely tree-lined roads and highways of Britain and other European countries or the eastern United States, is overcome by horror and disgust at this senseless destruction being perpetrated by a heartless bureaucracy. The New Zealander, steeped in love for his beautiful country is saddened, sickened and frustrated by it all.

RECREATION AND THE USE OF WILDERNESS

Recreation may be defined as the enjoyable but at the same time constructive use of leisure time. True recreation has purpose, and each and every human individual requires adequate recreational opportunity. This is axiomatic. The rapid growth and

spread of urban populations, with its resultant effects upon the day to day habits and occupations of people, has greatly increased the need for diverse recreational facilities.

Be it organised games, tramping, mountaineering, fishing, swimming, or the study of wildlife, increasing urban populations inevitably bring increased pressure upon all facilities supplying these interests. Furthermore, modern science and technology is granting men the right to longer hours of leisure through shorter hours of work. This trend will continue into the future bringing further pressure upon our recreational facilities. The six-day working week of ten hours work per day, which was the normal working requirement expected of the individual at the turn of last century, has given place in the space of less than sixty years to the present five-day week of eight working hours per day. Technology will undoubtedly further reduce these times in the foreseeable future and, at the same time, will, as it already has, make available to the ordinary person, increased monetary income and the ability to move more rapidly from place to place. Therefore greater opportunity will develop for longer holiday periods further afield. Are our citizens to be denied the means to enjoy this leisure and this money by the obliteration of our recreational and wilderness areas?

It is in this sphere of human activity that wilderness experience assumes its greatest importance by providing a means of escape from the crowded conditions of urban living, and from the monotonous regularity of industrial operations, as well as revealing to those who seek them the magnificence of Nature and the beauty of the natural scene. Experience in older industrialised countries indicates that people, with more leisure hours to enjoy, are turning more and more to the open spaces of the untrammelled wilderness for their recreational opportunities. Whether as motorists, cyclists, or walkers, the trend is the same.

Importance of Recreational Factor

Even in New Zealand it is only necessary to observe the phenomenal growth of the motor camping holiday over the past twenty years, or, more recently, the extraordinary growth of the youth hostel movement. Just what this trend can amount to in a highly industrialised country can be gauged from the United States where, in 1916, when the National Park system was inaugurated, the total number of visitors over the entire system was

333,000. By 1941 this had increased to 21,000,000, and by 1958 to 58,380,000. Since the development of an individual is influenced as much by the manner in which he occupies his leisure time as by the time he spends at his daily work, the constructive use of this leisure time is of very great importance to the well-being of both the individual and the community in which he lives.

The importance of wilderness to public recreation lies in the basic values which wilderness experience has to offer. Such recreational areas are not normally operated for economic gain because their primary values, the real basic reasons for their existence, transcend completely any monetary return which can be measured by the standards of the trading market. Although these primary values cannot be estimated accurately by the accepted rules of accountancy and economics they are reflected in the national economy in quite positive though often subtle ways.

Positive Benefits

Some of these positive benefits which can be obtained from recreational use of wilderness lands arise from the periodic escape of the worker from his daily routine offered by visits to such places. Such escape permits healthful relaxation which is invariably followed by improved efficiency of the worker upon return to his daily tasks and this improved efficiency is reflected in increased national productivity and wealth. Increased productivity will also arise from the psycholological reaction of a person to the physical and mental well-being induced by wilderness experience which provides opportunity for the development of new skills, broadened interests, wider knowledge, and deeper, more acute perception.

Wilderness provides a very wide range of recreational opportunities and facilities at a relatively low cost per person and this can be of paramount importance to the lower salaried groups of the community, particularly families, in seeking holiday relaxation. In those communities where wilderness experience is enjoyed freely, it has been noted that there is a distinct tendency for expenditure to decrease in the sphere of law enforcement, corrective institutions and hospitalisation, particularly mental hospitals.

Wilderness experience in national parks, scenic reserves, and

other wilderness areas, must, of necessity, become more and more important to the rapidly growing New Zealand community as the years go by. Properly developed by people who understand what is required in wilderness experience, our national parks and scenic reserves can provide an everlasting source of enjoyment and relaxation for both young and old alike. Commercially exploited for the production of electricity by a State bureaucracy, as at present being done at Lake Waikaremoana, Aratiatia, the Geyser Valley, and as proposed at Lake Manapouri, our wilderness areas will slowly but surely disappear and New Zealanders be denied the spiritual and physical uplift that only wilderness can supply. The development of city and urban parks as at present being done near Paekakariki in the Queen Elizabeth Park, though essential, does not supplant the need for the preservation of real wilderness areas.

The Mechanical Mentality

Neither does the formation of such places condone the destruction of beaches in the vicinities of cities, such as Wellington, in the manner recently witnessed at Mana, near Plimmerton. Here a railway embankment built out into the sea in extravagant fashion has virtually destroyed one of the pleasantest and safest beaches close to the city. This railway could just as easily have been carried through the spur of the hills as over the embankment, for the hill has been largely removed to make spoil for the embankment, thus creating a double eyesore in one fell swoop. This action of the Ministry of Works at Mana is yet another example of what Professor Gams described at the Caracas conference as "the expression of a merely mechanical mentality, short-sighted and lacking in real culture". Such activities as these are not only dangerous to the life and beauty of our country, but also to the physical and moral health and the cultural development of our people.

In the related fields of science and education where conservation plays an important part, the preservation of wilderness areas is of very great significance. We have in New Zealand some excellent legislation for the preservation of our native plants and native birds. This legislation could with advantage be expanded to give similar protection to other forms of native wildlife, but it is of little use enforcing such measures if the wilderness habitats in which our native plants and animals occur are to be

systematically destroyed in the interests of commercial exploitation. Nor can this legislation be really effective while vast herds of introduced browsing animals continue to roam at will through our protective forests and over our alpine watersheds, devouring and destroying the very plants which the legislation seeks to protect.

The fauna and flora of New Zealand are unique in the whole world and for this reason are of very great scientific interest, not only here in this country, but abroad. Their preservation is not entirely in our own selfish national interest, but also in the interest of scientific knowledge taken in the broadest sense, internationally. For these reasons our flora and fauna, and our landscape, are of great educational value. The finest texts ever written on geomorphology, the study of landscape, have been written by a New Zealander, Sir Charles Cotton, and the material about which he wrote and upon which he based his theories is the natural landscape of this country.

Interpreting Scenic Values

The advocacy of the preservation of our great scenic attractions and wonderful natural spectacles does not rest entirely on the recreational and aesthetic appeal of these places, but, in part, also upon their intrinsic scientific and educational values. These values have never been appreciated in New Zealand because there has never been any serious attempt to interpret these places to the public at large. Freeman Tilden, in his book *Interpreting Our Heritage,* defines interpretation as "revelation based upon information". It is not, he says, "instruction but provocation".

Nowhere, at any time, in New Zealand has any attempt been made to interpret a natural spectacle, such as the Geyser Valley, or the Aratiatia Rapids, to visitors, on the spot as it were, in the manner that it is done in the national parks or monuments of the United States of America, by the U.S. National Park Service. It does not require much imagination to visualise the immense influence such interpretation could have produced in the educational and cultural fields if applied to places like the Geyser Valley or the Aratiatia Rapids. Instead, today, without so much as an apology, we see these world famous places filched from the people of New Zealand in acts of State-sponsored vandalism such as have never been witnessed before. It is wrong that scenic areas in New Zealand should be devastated in this way without

prior, full and impartial inquiry by competent people, for not only are we losing our national heritage, but we are also throwing away those assets that form the wares of a lucrative tourist industry.

TOURISM

With the expenditure of very little effort, and with little organisational activity behind it, New Zealand during 1959 earned £3,264,000 in overseas exchange from visiting tourists. Like most people who travel for pleasure, these people came to New Zealand primarily to see and enjoy our scenic attractions, and to observe our manner of living. They were not interested in touring our electric power stations for they could, for the most part, see better examples of such things in their own countries.

With a real effort and good organisation and promotion behind it, New Zealand's tourist industry could double its earnings in five years, and probably quadruple them in ten years. If, however, the plums of the scenic, cultural and wildlife attractions of the country are to be systematically whittled away by economic exploitation in other directions the tourist industry will be left with nothing to sell.

Taking as an example the round tour from Rotorua to Taupo and back, the present and proposed activities of the State Electricity Department in despoiling and destroying such sites as Aratiatia and the Huka Falls, the Geyser Valley, Waiora Valley, Orakei Korako and Waiotapu erases fully fifty per cent of the tourist value of the trip. Add to this the proposals to use Tikitere for geothermal power and the Rotorua lakes for hydro-electric power and ninety per cent of the Rotorua District scenic attractions will be spoiled or lost for ever.

The Wares of Tourism

Our scenic assets—unbulldozed and undammed—constitute the wares of the industry: the raw material from which tourism draws its life blood. The protection and preservation of these wares are vital to the industry which must be unique amongst human activities in that it can "eat its cake and have it too". But it can only continue to "eat its cake" if that cake is properly preserved for future use. Although tourism has been freely advocated as an excellent earner of overseas exchange for this country by numer-

ous organisations and many individuals, including the Governor of the Reserve Bank, officialdom still pays but lip service to this lucrative industry with its potential employment for thousands of people, and continues to demolish its wares with bulldozers and all the other earth moving and earth shattering machinery at its disposal!

Tourist Income

In 1958 Britain earned £180,000,000 in round figures from tourists. There is no real reason why New Zealand should not draw comparable income from the bounty of people who travel as tourists.

Just what tourism means in terms of money can be judged from the travel survey made by the U.S. National Park Service of the Grand Canyon of Arizona in 1954. That year 814,100 people visited the park spending within its domain $10,663,000 (approximately £NZ3,834,892) and within the State of Arizona in the vicinity of the park $19,095,600 (approximately £NZ6,868,920) making a total, in New Zealand money, of £10,703,812 of revenue brought into Arizona by tourists visiting this national park. New Zealand, too, could reap a similar harvest if it retains and uses its scenic assets to develop an organised co-ordinated tourist industry.

THE NATIONAL PARK IDEAL

National parks, scenic reserves, and other wilderness areas are a natural resource. As with other resources they have meaning and value only when converted into products useful to man. Wilderness areas differ from other resources primarily in the nature of their "products". In the accepted sense of the term natural resources yield material things, but wilderness and especially national parks, yield the great cultural and inspirational products of knowledge, refreshment, and aesthetic enjoyment, equally needed by all persons.

History of National Parks

The national park idea, accepted today by so many countries, was born in the year 1870, when a group of American citizens,

meeting around a camp fire in the Yellowstone Valley decided to offer this unique place to the American people as a national park or "pleasuring ground for the benefit and enjoyment of the people". Led by Judge Cornelius Hedges, this group succeeded in its objective and the U.S. Congress in 1872 passed legislation establishing the Yellowstone National Park, the first such area in the world. Prior to this the State of California had, in 1864, set aside certain areas of the Yosemite Valley to "be held for public use, resort and recreation". As early as 1833, however, one George Catlin, writing in the New York daily press had advocated "A nations park, containing man and beast, in all the wild and freshness of their nature's beauty". Following the establishment of Yellowstone National Park many additional parks were added to the U.S. system before the turn of the century. The value of the national park idea was soon realised outside the United States, and Canada became the first country to follow suit, with the establishment of the Rocky Mountain National Park in 1885.

New Zealand a Pioneer

New Zealand, oddly enough, was also one of the first countries to follow this lead and our own Tongariro National Park was set up in 1894 as this country's first national park. National parks are now found all over the world, but the early enthusiasm shown in New Zealand has not been maintained. Today our country lags far behind the rest of the world in the setting aside of such areas, and in the proper maintenance and development of those areas we do possess. There are 215 national parks throughout Australia of which 8 are situated in Tasmania. Canada has 18, Mexico 25, Japan 19, the Philippines 21, Sweden 9, Yugoslavia 18, Russia 40, Argentina 11, to mention only a few. On the continent of Africa, where Game Reserves were first established in 1898, there are now at least 54 national parks established as such in the various countries of the continent, extending from Algeria in the north to the Union of South Africa in the south. The United States National Park System contains 181 sites of which 23 are national parks, the remainder being wild life refuges, national monuments and historic sites. Britain, since the passage of her National Park Legislation in 1949, has already established 17 national parks. In other countries, the laws protecting and preserving these places are far stricter than in New

Zealand and do not grant to the executive, or public servants, the rights of interference enjoyed by this coterie in New Zealand.

THE U.S. NATIONAL PARK SERVICE

The national park system of the United States, as at present constituted, was set up by Act of Congress in 1916. This Act clearly set out the purpose of national parks and how they were to be utilised in one famous clause which says:

"The service thus established shall promote and regulate the use of the Federal areas known as national parks, monuments, and reservations hereinafter specified by such means and measures as conform to the fundamental purpose of said parks, monuments, and reservations, which purpose is *to conserve the scenery and the natural and historic objects and the wild life therein and to provide for the enjoyment of the same in such manner and by such means as will leave them unimpaired for the enjoyment of future generations.*"

The italics are mine as I wish to draw my reader's attention to this extremely advanced piece of legislative phraseology. This phrase forms the basis and the spirit of the administration of all U.S. national parks. There is nothing like it in New Zealand, nor is there anything so binding on the administration in any section of our National Parks Act. Once set aside by Congress, under this Act, an area is inviolate and its status can only be altered again by Congress. No minister or public servant can alter it or interfere with it to its detriment, as can occur in New Zealand.

The Antiquities Act

Where an area, site, or object is considered of value to the people as a whole, and worthy of preservation, the President of the United States may, by proclamation, set it aside and preserve it under the Antiquities Act of 1906. Once set aside in this way, only Congress, and not the President, may alter its status. The people of the United States have in this Act power to curb the activities of over-zealous public servants at least until such time as any proposed utilisation of a site can be properly investigated from all angles. Since 1951 they have, in fact, successfully resisted attempts by the dam builders to despoil or destroy fourteen of their national parks, monuments and reserves, including such places as Echo Park and the Dinosaur National Monument.

In New Zealand we have no such legislation and the only way in which we can stay the hand of Government departments, such as the Ministry of Works, is by court injunction, which is very costly, or by petition to Parliament. Petitions are always difficult things to organise and seldom get the full consideration from the legislature that the gravity of their subject matter commands. If we had some means in New Zealand, similar to the Antiquities Act of the United States, whereby the Governor-General's authority could be exercised, provided a sufficient number of citizens desire it (as with the recent controversy over Aratiatia, for example) we should probably get much more efficient service to the public from responsible ministers and public servants than we do. Such legislation would allow full and public discussion of such matters, followed by full authoritative Parliamentary debate, before a decision were taken to destroy natural assets—instead of the hole and corner methods of the present time.

In the Annual Report of the Director of the U.S. National Park Service for 1932 there appeared an official statement of national park policy. This document indicates clearly the advanced thinking behind U.S. national park administration and I quote several extracts from it as follows:

United States Policy

"A national park should depend upon its own outstanding scenic, scientific, or historical quality and the resultant national interest in its preservation. The requisite national interest does not necessarily involve a universal interest, but should imply a widespread interest, appealing to many individuals regardless of residence, because of its outstanding merit in its class. The twin purposes of the establishment of such an area as a national park are its enjoyment and use by the present generation, with its preservation unspoiled for the future; to conserve the scenery, the natural and historic objects and the wildlife therein, by such means that will ensure their present use leaves them unimpaired. Proper administration will retain these areas in their natural condition, sparing them the vandalism of improvement. Exotic animal or plant life should not be introduced. There should be no capture of fish or game for purposes of merchandise or profit and no destruction of animals except such as are detrimental to use of the parks now and hereafter. Timber should never be considered from a commercial standpoint but may be

cut when necessary in order to control the attacks of insects or diseases, or otherwise conserve the scenery or the natural or historic objects, and dead or down timber may be removed for protection or improvement. Removal of antiquities or scientific specimens should be permitted only for reputable public museums or for universities, colleges, or other recognised scientific or educational institutions, and always under departmental supervision and careful restriction and never to an extent detrimental to the interest of the area or of the local museum.

"Education is a major phase of the enjoyment and benefit to be derived by the people from these parks and an important service to individual development is that of inspiration. Containing the supreme in objects of scenic, historical, or scientific interest, the educational opportunities are pre-eminent, supplementing rather than duplicating those of schools and colleges, and are available to all. The effort should be to make available to each park visitor as fully and effectively as possible these opportunities, aiding each to truer interpretation and appreciation and to the working out of his own aspirations and desires, whether they be elementary or technical, casual or constant.

Meaning of Recreation

"Recreation, in its broadest sense, includes much of education and inspiration. Even in its narrower sense, having a good time, it is a proper incidental use. In planning for recreational use of the parks, in this more restricted meaning, the development should be related to their inherent values and calculated to promote the beneficial use thereof by the people. It should not encourage exotic forms of amusement and should never permit that which conflicts with or weakens the enjoyment of these inherent values.

"Park administration must deal with important problems in forestry, road building and wild life conservation, which it must approach from angles peculiar to its own responsibilities. It should define its objectives in harmony with the fundamental purposes of the parks.

"Roads, buildings, and other structures necessary for park administration and for public use and comfort should intrude upon the landscape or conflict with it only to the absolute minimum.

"The national parks are essentially non-commercial in character

and no utilitarian activity should exist therein except as essential to the care and comfort of park visitors.

"The national interest should be held supreme in the national park areas and encroachments conflicting therewith for local or individual benefit should not be permitted.

"Private ownership or lease of land within a national park constitutes an undesirable encroachment, setting up exclusive benefits for the individual as against the common enjoyment by all, and is contrary to the fundamental purposes of such parks.

Parks to Exist for Ever

"National parks established primarily for the permanent preservation of areas and objects of national interest, are intended to exist for ever. When under the general circumstances such action is feasible, even though special considerations require the continuance of limited commercial activities or of limited encroachments for local or individual benefit, an area of national-park calibre should be accorded that status now, rather than to abandon it permanently to full commercial exploitation and probable destruction of its sources of national interest. Permanent objectives highly important may thus be accomplished and the compromises, undesired in principal but not greatly destructive in effect, may later be eliminated as occasion for their continuance passes."

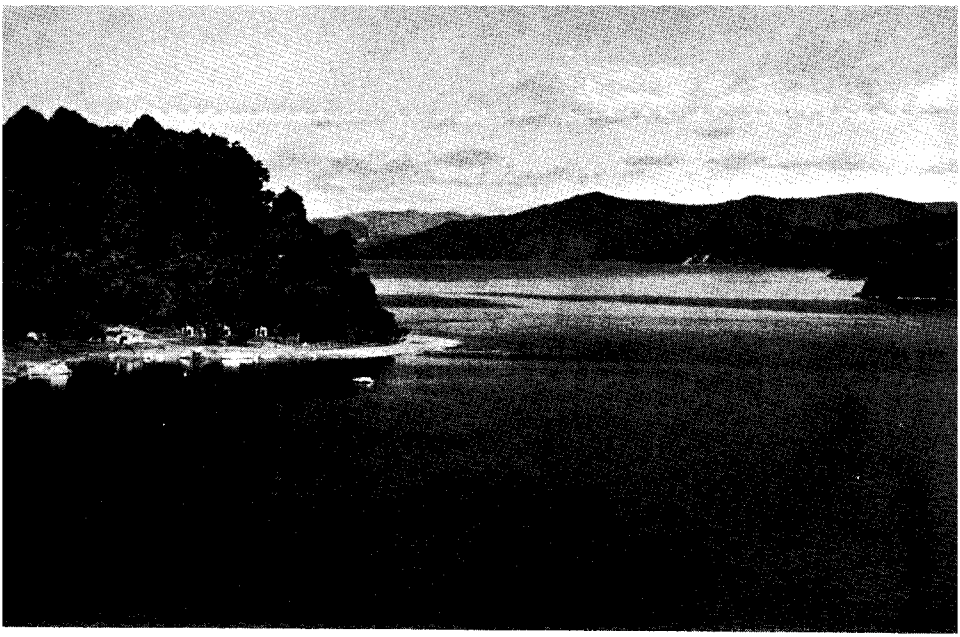
In the administration of their parks the U.S. Park Service often experiences difficulties in carrying out the spirit and letter of the law. However, by and large, so far as I could see during an extensive tour of the service in 1958, the U.S. National Park Service is second to none and is an example to the whole world in the practical application of conservation principles. It is an example which we in New Zealand might well follow and adopt, to our everlasting benefit.

U.S. Public Support

The people of America are wholeheartedly behind their National Park Service; they respect and admire the men of the Park Service. These officials are all highly-educated, enthusiastic for the out-of-doors and willing and able to transmit their enthusiasm and their knowledge to the visitors who stream into the parks. In 1958 the United States spent $73,794,500 on their national parks; of this $25,704,500 was for operation and $48,090,000 was

Above: "Pattern for the Future." Lake Monowai some thirty years after the lake level was raised 15 feet for hydro-electric purposes. This depressing picture foreshadows what will occur on a much vaster scale if present proposals are proceeded with to raise Lake Manapouri by 100 feet and Lake Te Anau by 25 feet.

Below: Lake Manapouri today, a scene of unspoiled tranquillity and serene beauty, offering perfection in wilderness experience. Must this be spoiled forever by Man's inhumanity to Nature?



Above and below: "Before and After", Aniwaniwa Arm, Lake Waikaremoana. The upper picture, taken 6 February 1937, shows this lovely place before large-scale hydro-electric development began. The lower picture, taken 12 January 1958 from the same spot, shows the result of 21 years of "development" and "enhancement of the scenery" at the hands of the New Zealand Electricity Department. Notice the wide mud flats left by the receding waters of the lake.

for capital improvements. On a population basis this, converted to New Zealand money, amounted to 3 shillings and 6 pence for each man, woman and child in the country. For the same period we in New Zealand spent £50,000 on our national parks; on a population basis this amounts to less than 4½ pence for each man, woman and child in New Zealand! This paltry figure gives a measure of the value officialdom places upon our scenic attractions and on the physical well being of that large section of our population that enjoys the out-of-doors. It would not buy all of us one ice cream per year and yet the Government deems it sufficient expenditure both to maintain and develop our national parks. It is not sufficient to maintain and to develop one of them properly, let alone nine! It did not contribute one penny to the upkeep of our scenic reserves. It is perhaps appropriate to emphasise that the Government that voted £50,000 in 1958 for the upkeep of our national parks, in that same year took from the taxpayers of New Zealand £244,882,000 in direct taxation.

THE NATURE CONSERVANCY OF GREAT BRITAIN

The Nature Conservancy is a corporation incorporated by Royal Charter on 23 March 1949, responsible to the Committee of the Privy Council for Nature Conservation and through which the Conservancy reports to Parliament. The Conservancy was set up following the recommendations of the two reports of the Wild Life Conservation Special Committees for England and Wales and for Scotland. These reports, presented to the British Parliament in July 1947, recommended the setting up of a Nature Conservancy and their recommendations were adopted in principle for immediate action.

Functions of Conservancy

The Royal Charter under which the Conservancy operates recites its functions in the following terms: "To provide scientific advice on the conservation and control of the natural flora and fauna of Great Britain; to establish, maintain and manage nature reserves in Great Britain, including the maintenance of physical features of scientific interest; and to organise and develop the research and scientific services related thereto."

Since 1949 certain additional statutory powers have also been conferred on the Conservancy by the National Parks and Access

to the Countryside Act 1949 and later legislation. The 17 national parks situated in England, Scotland, Wales and Northern Ireland are administered by the National Parks Commission which works in close co-operation with the Nature Conservancy. The National Forest Parks, of which there are ten in number, are similarly administered by the Forestry Commission. These latter areas include the New Forest and the Forest of Dean, which are preserved as the most characteristic examples of early British forests. Titles and deeds for the Forest of Dean can be traced back to before the Norman Conquest of England. At our present rate of utilisation of our natural forests in New Zealand it seems extremely unlikely that we shall, in another 900 years, be able to point to any forested area and say that it represents the original New Zealand scene as it was when the first Europeans began to settle here in the early 1800's.

Although in general it is often unfair to select passages from a report for quotation out of their context, there are certain statements in the report of the Wild Life Conservation Committee for England and Wales that are of great importance to conservation practice, and which should be given the fullest consideration in New Zealand.

On p. 2 we read: "Most changes in Nature are slow, insidious and not readily detectable; and they are often irreversible. A slowly dropping water-table; a change in the balance of power between small organisms the very existence of which is unknown except to a few; these are potent factors in the destruction of a countryside. An action which in itself appears sensible and desirable may have far-reaching and most unpleasant consequences, not foreseen and possibly not appreciated for fifty years."

Scenic Reserves

On page 3, speaking of existing reserves, the report says: "Places of outstanding charm and interest have been 'protected', but, through lack of knowledge, indifferent management, or stupidity, their value has waned". How truly these words can be applied to the scenic reserves of New Zealand!

The present unkempt, often disgraceful condition of many of New Zealand's scenic reserves is highlighted in the English report on page 63, where it says: "Since the 'natural' landscape with its plants and animals was produced by the play of natural forces, it

might seem sufficient merely to designate the places we wish to conserve and to allow these forces to continue to act. The results of such a passive and misguided policy are only too obvious to those who have experienced its application. A 'sanctuary' run on these lines may become a focus for noxious weeds and destructive animals and a menace to surrounding farmers and landowners . . . management is therefore essential".

Speaking of conservation the report says again on page 3: "Whatever the approach to this problem, whether by the scientist or the amenity planner, it must inevitably lead to one simple question: What has to be done to enable man to control nature so as to maintain or establish a series of varied and most delicately balanced conditions? It may be noted that this question is just as fundamental to agriculture, forestry, horticulture, game preserving, estate management, fisheries, and any other 'farming' of the living resources of the land and water as it is to the management of National Parks. Although so simple in form, it is one of the most difficult and intricate questions which science can be asked; so great is the complexity and variety, so nice is the balance. The truth is that in the majority of circumstances no answer that is even approximately correct can yet be given. This is the price that must be paid for past neglect. It is best that this fact should be frankly stated and faced; unless this is done, the noble projects of today will look very shoddy to succeeding generations."

England has learned her lesson the hard way. Can New Zealand not profit by England's experience or must we still allow our politicians, aided and abetted by power-seeking bureaucrats, to continue to destroy our land without the necessary knowledge to foretell the results of their actions for the future?

Necessity for Scientific Research

This emphasis upon the necessity for scientific research occurs throughout the English report. Emphasis is also placed on the need for co-operation between the different sciences and, in connection with preservation, on page 4 we find: "The ecologist, the plant or animal physiologist, the geneticist, the student of behaviour, the soil scientist, the climatologist and the statistician each has his prominent place in the picture. But standing level with the biological sciences, though too often neglected in the context of nature preservation, are the geological and physio-

graphical sciences; for it is from the nature and distribution of the rocks and from the configuration of the earth's crust that the natural beauty of scenery and its living carpet are derived".

The report advocated firstly the provision of adequate facilities for research and study of ecological and other factors affecting conservation and secondly the development of a coherent policy of conservation and wild life management based upon the knowledge so gained. In speaking to these recommendations on page 64 the following appear:

Man a Destructive Animal

"Man is potentially the most destructive of animal species, and through ignorance and neglect frequently destroys things of great value to his own material, mental and spiritual advancement. The benefits that could be derived from a fuller and more intelligent use of the natural resources of this country are very great."

"The highly intricate and involved series of inter-actions which bring about the balance of nature are far from being completely understood and are sometimes of a most unexpected kind. Changes are often slow, insidious, and not readily detectable . . . The maintenance of any desired balance can be achieved only by a great increase in knowledge and by its skilful application."

". . . demands for further development of land are increasing. Any proposals for taking or designating land for scientific or conservation purpose must, therefore . . . be fully justified. Not only must the claims of science and nature conservation be dovetailed with those of landscape preservation and recreation, but both must also adjust their demands to take full account of other national interests and economic necessities."

I have quoted at length from this report because it expresses so perfectly what is in my own mind, and because it gives to these ideas the authority of an investigating committee from England comprised of the leading thinkers on conservation in that country. What the report says could, without modification, be applied to New Zealand in full measure; it is, in fact, long overdue in this country. If we in New Zealand continue to ignore these things we do so at great cost to future generations.

New Zealand Compared

How much have we already destroyed in this country "through ignorance and neglect"? "Changes are often slow, insidious . . ." a phenomenon which is already rearing its ugly head as an after-

math of misguided hydro-electric developments. Has any project in New Zealand yet been considered "taking full account of other national interests, economic necessities or landscape preservation"? Economic development in New Zealand has been, up to the present, one made up of acts of expediency piled on top of one another without thought for future consequences. We have destroyed in 100 years a vast landscape of great natural beauty and failed to replace it with beauty of our own creation. We have now a stark farming landscape devoid of the softening beauty of woodlands, dissected by straight roads lined with barbed wire fences, power poles, telephone poles and weeds, roads that so often lead from the mess of one scenic reserve to the mess being made of another.

During 1958 the Nature Conservancy in England was subjected to a searching inquiry from a Select Committee of the House of Commons. It is of great interest to note that this Committee in its report to Parliament appreciated the importance of the work of the Conservancy and offered only minor criticisms, mostly of an administrative nature. In the final conclusions of its report the Committee had this to say:

Inquiry Committee Impressed

"The Sub-Committee were impressed with the potential value of the work carried out by the Conservancy. This included the study of soils and their improvement, water conservation, the effects of burning and of grazing on vegetation, the regeneration of woodlands, planting against erosion and flooding and the study of animal and insect populations. The accommodation and equipment seen by members of the Committee seemed in no way extravagant. Your Committee were informed that expenditure and resources generally applied to analogous projects abroad are more extensive than they are in this country and had been operating for many more years.

"Your Committee believe that the scope for scientific research in this field is almost unlimited and that therefore it is important that wisdom and common sense are brought to bear in selecting projects for research which will redound to the prestige and prosperity of the nation."

Here again may be noted the emphasis on research in the activities of the Nature Conservancy in Britain. Much of this research is directed towards the conservation of the remaining wildlife

refuges, their inhabitants, including insect life, and towards better ways of utilising available lands and waterways. In comparison with this policy New Zealand shows up very badly indeed; very little research in this country is directed towards conservation of any of our native wild life, plant or animal, and most certainly never towards the protection of any species of our extremely unique insect fauna! Insects, as such, in this country, are officially regarded as something to be done away with, and the idea of extending legal protection to a unique insect of great scientific interest would be greeted with uproarious hilarity by the average New Zealand politician and with considerable astonishment by the ordinary citizen.

N.Z. Research Unco-ordinated

It may be argued that certain government scientific agencies in New Zealand do undertake research along the line of the Nature Conservancy in England but such activities in this country are sporadic, and always unco-ordinated. The major problems in conservation which confront us as a nation remain untouched—problems such as the conservation of our mountain watersheds, or the "farming" of our indigenous forests *in perpetuity* instead of the destructive policy of extinction at present being pursued in the milling of native timbers.

In the first ten years of its existence the Nature Conservancy of Great Britain has succeeded in having set aside no less than 72 new nature reserves and has greatly improved and brought up to date the legal basis for conservation in Britain. Two research stations have been established, one at Merlewood in Lancashire and the other at Furzebrook in Dorset. Public relations programmes have been set in motion aiming at helping the public to understand the aims of nature conservation, and what they mean, and to demonstrate how nature conservation policies work. Publications of booklets, press articles, and radio and television broadcasts have all been used in this public relations programme, and with excellent results. The British public has responded splendidly to the work of the conservancy, and I am sure that the public of New Zealand would do likewise if they were given the opportunity to do so.

I.U.P.N.

The International Union for the Protection of Nature and Natural Resources, with its headquarters in Brussels, exists at the

international level for the furtherance "of the planned and co-ordinated use, in all parts of the world, of renewable natural resources, and the active conservation, through basic education and appropriate legislation, of outstanding areas where the flora and fauna are of special scientific, economic and aesthetic significance, where the landscape presents special features, or where objects of historic and cultural importance are found."

The Union works to "promote protective measures on an international scale by encouraging co-operation between governments and national conservation agencies" to "spread knowledge among children and adults everywhere by helping them to appreciate their natural environment and the dangers inherent in its abuse"; to "diffuse information on modern methods of nature conservation through such mediums as the press, radio and television"; to "sponsor programmes of scientific research".

Within the activities of the Union the emphasis is not on the conservation of natural resources against man but is directed towards the active and practical application of conservation principles for man himself.

Renewing Natural Resources

The Union maintains that the animal and plant life, the watersheds, as well as the living elements contained within the soil, can, by careful management, be made to renew themselves indefinitely. This is equivalent to a "banking" of the capital of renewable natural resources, as distinct from the policy that we have in New Zealand which leaves them exposed to irrational waste and irresponsible depredation.

The Union is composed of governments, international organisations, and national organisations within different countries, all of which are concerned with the preservation of the natural environment of man and the conservation of the world's natural resources.

Only one body in New Zealand belongs to the Union, and this body is the Forest and Bird Protection Society of New Zealand. Our Government, as such, does not belong, nor does any section of the Public Service. It would be surprising, indeed, if any members of our present administration have ever heard of the Union, let alone acquainted themselves with its objectives. The upper hierarchy of the Public Service in this country, who should be concerning themselves with the implications of conservation,

have never evinced any interest in the Union nor in its objectives. In this we have yet another instance which serves to give some measure of the interest, or rather the lack of interest or concern in official quarters in New Zealand, pertaining to conservation. The foundation of human civilisation rests upon the earth's renewable natural resources; man's greatest source of spiritual inspiration derives from natural beauty and yet we in this country continue to barely even pay lip service to this important doctrine.

CONFERENCE ON CONSERVATION OF NEW ZEALAND SCENIC ATTRACTIONS

On 24 November 1959 the present Government convened a conference in Wellington to discuss this important matter. This resulted from a deputation to the Prime Minister, Mr Nash, from the New Zealand Travel and Holidays Association which discussed with the Prime Minister the question of damage to New Zealand scenery resulting from State Hydro and other Government activities, and in which the idea of holding such a conference was put forward.

Many people from many organisations and walks of life welcomed this opportunity to discuss at last, as we expected and thought we would, this important matter with the public servants concerned. When the conference opened we were, however, quickly disappointed. The entire proceedings degenerated into a form of gigantic deputation in which the various organisations present were allowed to put forward their "submissions". The Chairman, the Minister of Works, intimated in his opening remarks that each organisation would be limited to one speaker who would himself be confined to ten minutes only and would not be allowed to speak twice. People who had attended the conference with facts, figures and argument, in the hope of discussing such controversial projects as Aratiatia and the Manapouri development, never got a proper hearing.

There was no discussion worthy of the term, and though the time bell was promptly rung down on members of the public, it was noteworthy that civil servants present in support of the Minister were allowed to continue indefinitely and did so in one case for over half an hour. Interjections and contradictions came frequently from the official delegation against which those present had no right of reply.

Discussion Circumvented

At the beginning the Chairman informed the meeting that nothing the conference said or did would be allowed to stand between the Government and its plans. Any attempt to bring forward specifically the question of Aratiatia for proper discussion was circumvented. Likewise an attempt to discuss the Manapouri scheme was ruled out of order.

One would at least expect the Minister of Tourist and Health Resorts to show some interest in the preservation of our country's scenic assets but this Minister's contribution at the scenery conference to the question of Aratiatia was to ask "why there was such a fuss about it at this late stage; objection should have been made years ago". How short the Minister's memory is, for my own records of public published objections to the Aratiatia project go back to 1952!

It was evident from the outset that the whole affair was to be a carefully engineered sop to an outraged public opinion. In this it was no doubt successful, and the official side must be complimented on the manner in which they organised their part of the proceedings; it was an organisation which those present from the public were ill equipped to combat.

The resolution which was passed unanimously at the conclusion of the conference calling for the setting up of a Nature Conservancy in New Zealand was taken "for favourable consideration of the Government" by the Minister, but to date it has not received the favourable consideration which it was promised. This resolution moved by the President of the Travel and Holidays Association, Mr J. Newman, and seconded by myself was supported by the following two statements:

Statement of Mr J. Newman read on behalf of the New Zealand Travel and Holidays Association (Inc.)

"The New Zealand Travel and Holidays Association, as the body which originally requested that this conference on the preservation of our natural scenic resources be called by the Government, is naturally delighted with the response received. It reflects, we believe, the widespread uneasiness felt in many responsible quarters at the prospect inherent in some of the hydro-electric development proposals of losing or damaging some of New Zealand's finest natural attractions. As a proof of this uneasiness, if proof is needed, we have collected here, on one large sheet,

literally many, many yards of press comment on these development proposals–proposals which Dr J. T. Salmon, Senior Lecturer in Biology at Victoria University, first brought to our Association's notice at our Christchurch Convention last June. It was Dr Salmon's address, therefore, which provided the spark which set alight dormant public thinking on this problem of the destruction of some of our valuable scenic resources.

"It is not our intention to submit to this conference detailed evidence in support of a particular plan to overcome or alleviate this problem. Our main purpose as an Association will have been served if public interest in this question has been aroused, as I believe it has. We believe that the two main interests, preservation of our natural resources and provision of power for industry, are not necessarily incompatible, provided we are willing, in a spirit of compromise, to adopt plans based on those adopted in some countries overseas. It is on this particular aspect we make our contribution to the discussion.

"In New Zealand no overall conservation authority exists. What conservation policy we possess is administered by seven different Government Departments, by Acclimatisation Societies, by the Soil Erosion and Rivers Control Council and by Catchment Boards, under thirteen different Acts of Parliament.

Part of Larger Problem

"While this Association is mainly concerned with the preservation of scenic assets to cater for the recreational needs of New Zealand people, as well as forming a basis for a lucrative tourist industry in this country, we recognise that scenery preservation is but one aspect of the much larger problem of conservation in all its forms which is looming up in New Zealand. The damage that has already been done to scenery in our country in the past must be accepted, but we strongly condemn further interference and damage to remaining scenic assets in this country without full, competent and unbiased investigation.

"The Scenic Reserves and Domains Act, the National Parks Act and the Public Works Act confer upon Ministers of the Crown or their deputies wide powers for the entry on to and utilisation of land and waterways in Scenic Reserves and National Parks. We refer in particular to sections 16 and 97 of the Reserves and Domains Act, under which a Minister has power to utilise Scenic Reserves for power development or mining or to annul

a reserve on his own authority alone. Similarly section 32 of the National Parks Act allows a Minister on his own authority alone to utilise waterways in National Parks for electrical power development, irrigation or any other purpose. Under sections 311 and 312 of the Public Works Act, a Minister enjoys almost absolute powers of entry on to and use of land. At the present time we see these clauses being operated upon by the Minister of Works, in interfering with the scenic reserve at the Aratiatia Rapids.

Serving National Interest

"It should be conclusively shown that there exist no other alternatives to the development of such areas and that the national interest of New Zealand would be better served by their commercial development, rather than in retention in their natural state, for the sake of their scenic, scientific, educational, cultural and associated values, to provide enjoyment and relaxation for the people of New Zealand.

"In matters of conservation and scenery preservation New Zealand lags behind other western civilised countries. Great Britain has had a Nature Conservancy since 1949.

"The United States of America has possessed a similar body in its National Parks Service for 43 years. Switzerland and the Scandinavian countries also have similar councils for the conservation and protection of their countryside.

"Even Holland, a country with a population density of 880 persons per square mile, sees fit to preserve its natural heritage. Areas exhibiting geological or biological features of scientific and educational interest are preserved by the State Forest Service, in co-operation with the Institute for Field Biological Research. Such areas as are recommended, after thorough investigation, for preservation may be purchased either by the State or by Societies equivalent to our New Zealand learned societies, out of moneys subscribed for the purpose by the general public.

"Tasmania has a Scenery Preservation Act administered by a Scenery Preservation Board with wide powers for the protection of scenery in scenic reserves and national parks, wild life, native forest lands, historic sites and settlements and historic architecture.

"We need in this country a nature conservancy with wide powers similar to those vested in the Nature Conservancy of

England, the National Park Service of the U.S.A. and the Scenery Preservation Board of Tasmania. Such a conservancy in New Zealand should, in the first place, formulate and put into action without delay an interim conservation policy for, say, a three year period. At the same time, it should instigate both short and long term scientific investigations of conservation problems in New Zealand, so that, at the end of the interim period, a reasonable national conservation policy embracing scenic, wild life, geological and historical aspects could be promulgated.

Independent Council

"These interests might best be served by a Conservancy governed by an independent Council responsible directly to Parliament.

"This Council could with advantage consist of 16 persons, made up of two sitting members from the New Zealand House of Representatives and one representative of each of several interested responsible national organisations, such as the Royal Society of New Zealand, New Zealand Geographical Society, the New Zealand Association of Scientists, New Zealand Travel and Holidays Association, the two Motor Unions, the Federated Mountain Clubs, the Federated Farmers, Forest and Bird Protection Society of New Zealand, the Associated Chambers of Commerce, together with two representatives from the New Zealand Universities, and two independent citizens, appointed by the Governor-General in Council for their interest in conservation.

"If a Society were formed in New Zealand similar to the Council for the Preservation of Rural England, this body might be granted representation on the Conservancy Council, bringing the total membership to 17.

"Government Departments such as Lands, Forestry, D.S.I.R., Tourist, State Electricity and Agriculture should have one representative each at meetings of the Conservancy Council to act as observers and advisers.

"We believe that such a nature conservancy, based on overseas experience and amended to suit New Zealand conditions, has become an urgent necessity for two important reasons:

"1. To formulate and implement a national conservation policy for scenery, wildlife, natural and historic monuments.

"2. To co-ordinate the conservation policies of 7 different Government Departments and several National Societies working

under 13 different Acts of Parliament in one overall responsible body.

"Accordingly we recommend for consideration the following motion: I move '*That this conference approves in principle the setting up of a nature conservancy in New Zealand and requests Government to take such legislative steps as are necessary to this end without delay. This conservancy to be responsible to Parliament and to have statutory powers sufficient to enable it to implement a conservation policy aimed at the protection and preservation of New Zealand scenery, wild life, natural and historic monuments*'."

Statement by Dr J. T. Salmon, F.R.S.N.Z. in seconding the motion of the President of the New Zealand Travel and Holidays Association.

"I rise to second this motion in the knowledge that I am moving for the establishment in New Zealand of something that has been required for a great many years and which at the present time has become an urgent necessity. Last year I was privileged to study on the spot the National Park Service of the United States of America, and to see something of the activities of the Nature Conservancy in Britain and of conservation practices in other parts of Europe. This experience served to confirm my previously held conviction that New Zealand, compared with much of the rest of the world, is extremely backward in the conservation of her natural resources, the preservation of her scenery and in the implementation of a sound policy for the preservation and development of her National Parks and scenic reserves. A conservancy with adequtae legislative powers could do a great deal to alleviate the present unsatisfactory situation in New Zealand. That the present situation regarding the preservation of our scenic heritage is unsatisfactory and calls for correction is clearly shown by a review of the damage caused throughout the country by the activities of the State Electricity Department. May I refer to :

Disgrace of Waikaremoana

"The present disgraceful condition of Lake Waikaremoana, which is now surrounded by acres of slimy mud, weeds, and decaying trees exposed through the activities of the Electricity Department lowering the lake level by some 50 feet.

"The despoliation and probably ultimate extinction of the once world famous Geyser Valley at Wairakei.

"The destruction of the Waiora Valley at Wairakei.

"The destruction of the holiday resort at Lake Tekapo where by raising the lake level the old popular recreational areas have been flooded out and are now marked by dead and decaying trees, sticking forlornly out of the water. No attempt has been made here by the Department to clear away these remains nor to reconstitute this once lovely spot. Even the telephone poles and remains of the old skating rinks and resort buildings are left half submerged to remain as eyesores until they decay and rot away.

"The devastation wrought at Lake Pukaki by raising the lake level with no attempt to clear the trees from the famous island, which now remains a gaunt reminder to the traveller of the notorious indifference of engineers to scenic values.

"The inundation of forests at Lake Monowai, whose dead trees will persist for the next 150-200 years as a spectre of the electrical age.

Effects on Hawea

"Lake Hawea, where the raising of the lake level by 75 feet, besides completely submerging Kidd's Bush, is going to have far-reaching and disastrous effects on the scenic value of the western reaches of the lake; the lake outlet, once a lovely rendezvous for holiday makers and campers, is utterly and completely obliterated.

"The unnecessary obliteration of scenery by badly routed unplanned power reticulation such as that seen alongside the Desert Road and similar unsightly reticulation now being erected across the McKenzie Country in the South Island, obscuring the views of the Southern Alps.

"Add to this the contemplated interference with the Aratiatia Rapids and Huka Falls, the thermal regions such as Waiotapu and Tikitere, the South Island lakes of Manapouri, Te Anau, Wanaka and Ohau, the Rotorua region lakes in the projected Kaituna Scheme and we have a sorry trail of desolation and destruction extending almost from one end of the country to the other. If this proceeds unchecked very few of the great scenic attractions of this country will remain in their natural unspoiled condition.

" 'Man cannot live by bread alone' is a truism all too often

overlooked or brushed aside in our modern society of high speeds and political expediency. A piece of iron may weigh as much as a bale of wool, but who could state that the one was more valuable than the other. Is a man justified in taking space in his home garden to grow a rhododendron when in the same space he might grow some more beans and a few potatoes? The economic and the aesthetic values cannot be measured by the same yardstick yet our society is all too often over anxious to value the economic things, leaving from consideration the aesthetic things until we have lost them and it is too late.

"New Zealand people are just beginning to really appreciate the values of their scenic assets and we must begin at once to protect these values from destruction through careless, wasteful exploitation by dam builders, road builders and others. Beauty should not be protected at any price, nor should economic values be the only ones considered. Each scheme should be carefully weighed to ascertain the real values represented in each particular thing and a decision to destroy one thing to create another should be thoroughly examined beforehand lest we lose those things that we will be sorry for later.

Wilderness for Relaxation

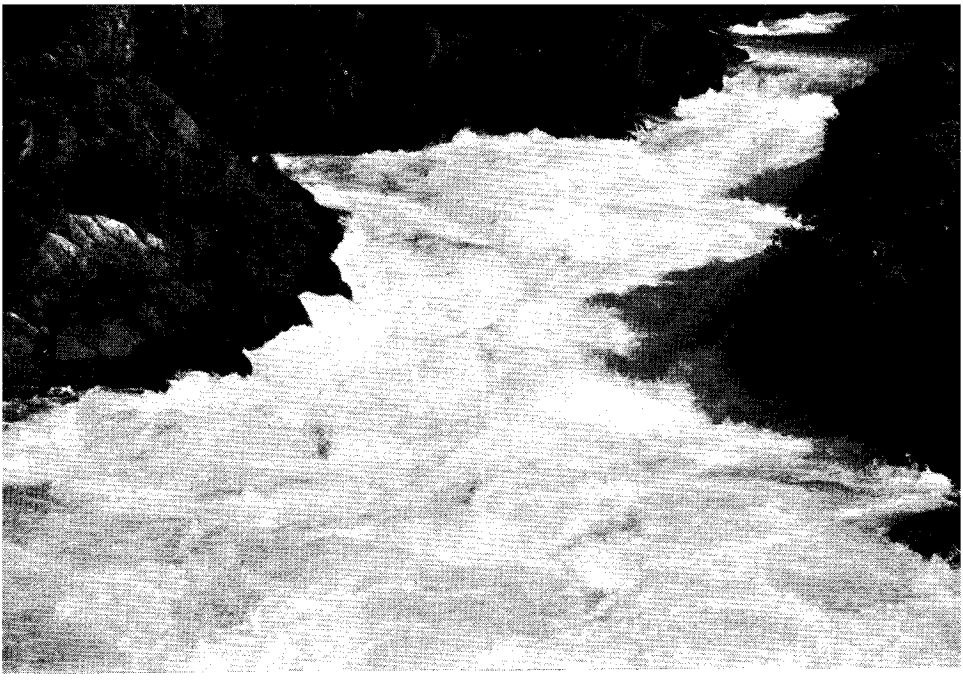
"Industrialised communities the world over are recognising the need for wilderness areas to provide relaxation, refreshment and inspiration for the bodies and minds of their people. This need has never been recognised in New Zealand. Today it is imperative that we should recognise this growing demand for wilderness experience and keep faith with future generations by conserving wilderness areas now for their experience, education and enjoyment

"Many years ago our elders considered the Aratiatia Rapids worthy of setting aside as a scenic reserve, for the enjoyment and inspiration of future generations. Today without impartial inquiry that reserve is being torn apart, plundered and spoiled in an act of State sponsored vandalism the like of which has never been seen in New Zealand before. Handed over to engineers to turn it into an electric power station, the Aratiatia Rapids are doomed as a natural spectacle. Engineers are notorious the world over for their inability to comprehend aesthetic values which in many cases are greater than the economic values. It is the public's money that is being spent at Aratiatia and the public is

entitled to know what benefits are to be gained and what are to be lost by the construction of this power station. The people of this country have never been given this information. They are entitled to receive it through Parliament and to have the right of objection to it if they think fit. The same situation prevails in regard to the threat that looms over Lakes Manapouri and Te Anau where a Lands Deparment lien prevents the sale of land along the lake shore within 100 feet elevation of the water's edge. Before changes in the status of the Aratiatia Scenic Reserve are authorised by the Government, and before any interference with Lakes Manapouri or Te Anau is considered it should be conclusively shown by the Electricity Department that there exist no other alternatives and that the national interests of New Zealand will be better served by their commercial development rather than through their retention unspoiled for the sake of their scenic, educational, scientific, cultural and associated values whereby they can provide enjoyment and relaxation for the present and future people of New Zealand.

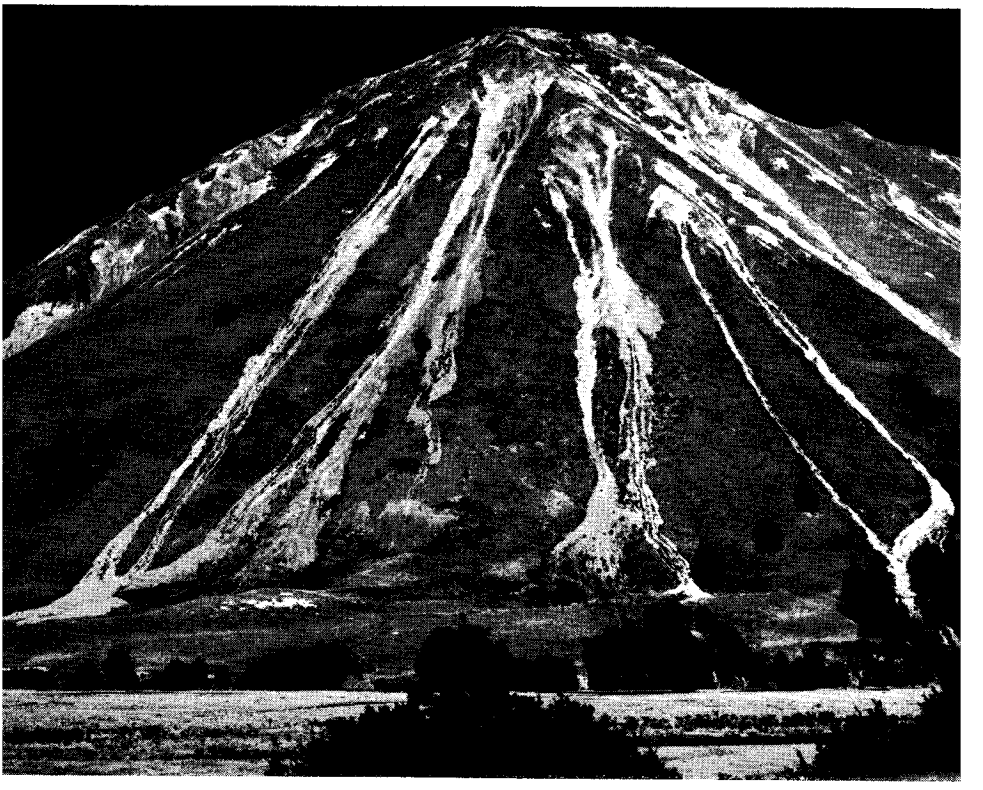
A Worldwide Problem

"This problem of damage to scenery along with the associated problems of damage to wildlife, historic sites, and arable land by hydro-electric installations is not peculiar to New Zealand. It is world wide and is the subject of a report issued by the International Union for the Protection of Nature, a subsidiary authority of UNESCO, following an international congress held at Caracas in 1952 to discuss this problem. Glancing through this publication I see grave concern expressed over the damage caused by hydro-electric developments in many countries, including Switzerland, France, Austria, Italy, Venezuela, Colombia, U.S.A., Japan and Australia. Scientists in all these countries and others speak of the destruction wrought by dam builders to scenery and valuable farm lands, the ruination of dwellings and established communities, the despoliation of natural fishing and spawning grounds, of historic sites, of interference with water tables, and of the creation of unnatural conditions leading to the extinction of animals and plants and other ill effects often not evident for fifty years or more. Problems such as these have scarcely even been considered, much less faced up to, by the Electricity Department in New Zealand. A Nature Conservancy along similar lines to that established in England ten years ago could help in the solution



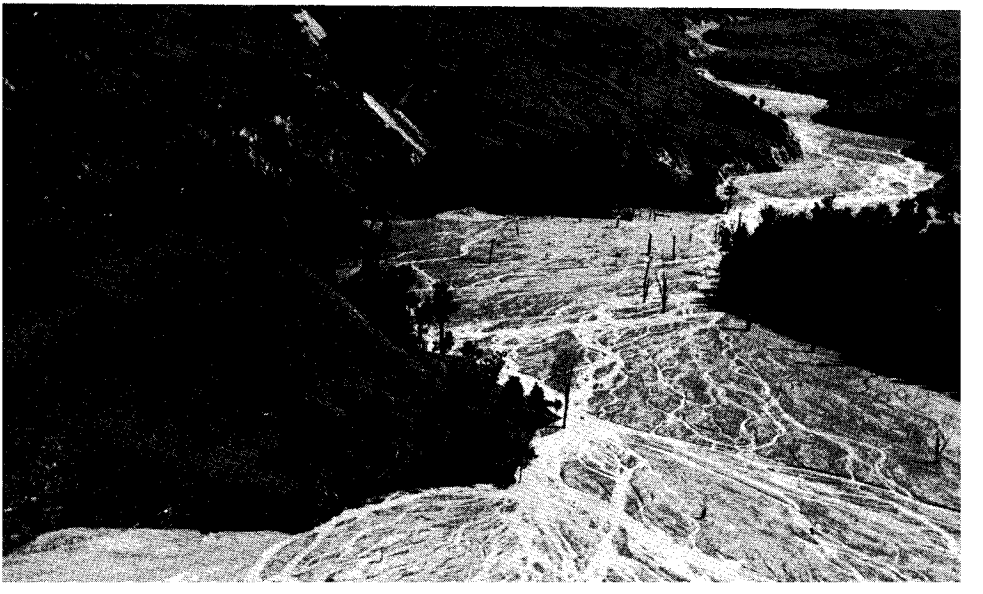
Above: The Aratiatia Rapids seen in their full magnificence from the look-out rock in the middle of the rapids. When the power station commences to operate in 1964 this spectacle will become a memory of the past.

Below: "The Devil's Eyeglass" in full eruption. This famous thermal site was destroyed, quite unnecessarily, by bulldozing activities during the quest for geothermal steam.



Above: "Stage Set for Catastrophe". This picture from the Lake Coleridge hydro catchment is one of the many illustrating devastation all over New Zealand through the misuse of land. The final result—floods, erosion, destruction of farm lands and scenery, silting up of rivers, lakes and dams.

Below: Down to the sea in rivers of mud go the soils and hills of New Zealand. Indiscriminate sawmilling, deer and other browsing animals, over-grazing of farm stock, burning-off—all help produce scenes such as this from the Gisborne district.



of these problems. The Nature Conservancy in England is an independent body, set up by statute and responsible to Parliament. It formulates and administers conservation policy throughout England, Scotland and Wales. It establishes and looks after nature reserves, on both public and private lands, for the protection of scenery, wild animals and plants, geological and other natural monuments or spectacles. Such reserves once established can only be altered with the consent of Parliament. The Conservancy today employs some 250 people, of whom about 70 are research scientists; the remainder are rangers, wardens and estate workers, cartographers and administrative staff. Two research stations are in operation, one at Merlewood in Lancashire, and the other at Poole Harbour in Dorset. In its first ten years the Conservancy has established 72 Nature Reserves throughout Britain.

U.S. Service an Example

"In the U.S.A. the National Park Service performs the same service with the added cares of maintaining national parks, national shrines and monuments. With 43 years of experience behind it the U.S. National Park Service is an example to the whole world in the practice of conservation and in the development, utilisation and interpretation of wilderness experience for the enjoyment, education, inspiration and refreshment of the American people. With a staff of nearly 2,000 the Service looks after 189 sites spread over the U.S.A. Since 1951, largely by directing attention to suitable alternatives the National Park Service has successfully resisted 14 attempts by the dam builders to despoil reserves under its care.

"In the firm belief that we need such an organisation in New Zealand I have much pleasure in seconding this resolution."

The hopes of many that at last something could be done in this important matter of scenery destruction were on 24 November 1959 dashed to the ground by the steamrolling tactics of an organised bureaucracy.

I have dealt at some length with the conservation situation as I see it in Britain, the U.S.A., and with the International Union for the Protection of Nature and Natural Resources, comparing these various situations with that in New Zealand. I could con-

tinue by discussing conservation and national parks in many other countries such as Holland, Germany, Africa, South America, Japan, wherein both thought and action on this subject are far in advance of New Zealand. However, at this stage it seems to me that the subject might now be better served by a critical review of what has happened and is happening in New Zealand.

PART TWO

THE NEW ZEALAND SCENE AND CONSERVATION

IN CIVILISED COUNTRIES ABROAD, in addition to the economically valuable natural resources such as timber, minerals, water, and agricultural lands, the inherent recreational values of wilderness and scenic areas are now recognised as an important natural resource. If people are to obtain the maximum possible benefit and enjoyment from such areas, a full public understanding and appreciation of the significant features of these places must be developed. In this we in New Zealand are particularly lacking; not so much in appreciation, perhaps, as in understanding of the significance of our wilderness and scenic attractions.

Through this lack of ours we are at present allowing great slices of our priceless natural heritage to be torn away from us and put to profitable use by both government and private action, with the accompaniment generally of inexcusable and irreparable damage and destruction.

Human Impact on Wilderness

The recreational values of wilderness and scenic areas are affected in various and diverse ways by the activities of man. Industrial development and the accompanying growth of large urban centres of population are, in New Zealand as in other countries, resulting in the pollution of streams, lakes, rivers and ocean beaches. The erection of dams, with the formation of artificial lakes, sometimes provides certain recreational opportunities. More frequently it destroys much more valuable facilities and interests through the flooding of scenic, historical and archaeological sites.

The proposed hydro development on the Wanganui River with a high dam at Parakino would be an outstanding example of this destruction. Consider what New Zealand will lose scenically, historically and archaeologically if this scheme becomes an accomplished fact.

Improper methods used in harvesting timber resources can adversely affect scenic values and, along with improper methods in the grazing of stock, may have extraordinary and far-reaching

consequences upon the countryside. The acceleration of highland erosion and the silting up of rivers and streams have already occurred on an alarming scale in New Zealand.

Ill-advised and indiscriminate draining of swamps and marshes can greatly affect the abundance of swamp birds as well as the general level of the water table. Private acquisition of ideal residential sites along the shores of lakes and beaches can remove large sections of these attractive areas from general public use. We see this sort of thing today around many of our lake shores, particularly Lake Taupo.

In such places of great natural beauty the needs of the community should take absolute precedence over the desires of the privileged few. In the interest of the public welfare, whether it be lake shore, stream, river, swamp, ocean beach, scenic or other wilderness area, all aspects of human need should be carefully assessed. Not till then should action be taken to convert potential recreational areas to trading or other economic purposes. The administration, exploitation, and management of all natural resources should also be properly co-ordinated. In New Zealand we can no longer afford to act hastily without full investigation into every case; nor can we continue to ignore the future in the hope that ill-advised action now can be corrected later. Mistakes made in this way are all too often irreparable.

Agencies and policies which have undermined scenery conservation in New Zealand in the past include timber milling, introduced animals, land settlement followed by poor farming practices, the burning off of forest, tussock and grasslands, public apathy, and individual acts of vandalism. In more recent years the Ministry of Works and the State Hydro-electric Department have emerged as the greatest menaces that have ever developed in New Zealand to both our rural and our wilderness scenery, and to the basic principles of conservation. Our scenic reserves and our national parks are being despoiled and violated today by government departments in ways contrary I am sure to the wishes of the great majority of the people.

I will now survey in detail some examples of these activities.

Lake Waikaremoana

"The sea of glittering waters", once a glorious place breathing the very essence of wilderness and all that it stands for. Now, after twenty-odd years of "development" at the hands of the

Electricity Department this once beautiful lake is reduced to a pond surrounded by mud, dead trees and weeds. The once popular Lake House now closes down for part of the year through lack of patronage.

Some of my readers may remember Lake Waikaremoana in the days before it was utilised for electric power development. They will recall this gem of the North Island's scenic attractions, set amongst forest clad mountains with the trees dipping into its clear sparkling waters. Look at it now, with an ugly tide mark round its shores, the forest separated from the water by some fifty feet. Gone are those delightful inlets of Aniwaniwa, Mokau, Hopuruahine. In their places lie acres of mud flats growing weeds such as ragwort, thistles, blackberries and raspberries. The lake surface itself is studded with the gaunt remains of the ancient forests inundated when the lake was formed, some 2,000 years ago, but now exposed to view by the receding waters.

During the electricity crisis of the early 1940's—a crisis brought about by the continued ineptitude of the Department—water additional to the normal overflow was siphoned out of the lake to keep the turbines of the power stations turning. At the time the public was assured that once the crisis was over the lake would be refilled once again to its original level. This, however, can never be. The Department has now permanently lowered the level of the lake by some twenty feet. Even if it does again manage to reduce its demands on Waikaremoana for sufficient time to replace the vast quantity of water sucked out the lake will never be restored to its original beauty. This once beautiful place, despoiled so unnecessarily in the interests of expediency, will remain for generations to come as a monument to the stupidity of engineers who operate without knowledge or thought for conservation.

Lake Permanently Affected

After I first publicly drew attention to the permanent lowering of the level of Lake Waikaremoana in an address to the Napier Chamber of Commerce on 27 August 1959 I was taken to task by the District Commissioner of Works in Napier. In an address to the local automobile association, reported in the Napier *Daily Telegraph*, he flatly contradicted my statement. This gentleman presumably would be the person who authorised and carried through the construction of the highway across the old

lake bed at Aniwaniwa, a road which would be under some ten feet of water if the lake returned to its original level!

At the Scenery Conference in Wellington two months later the General Manager of the Electricity Department officially confirmed that the level of Lake Waikaremoana had in fact been permanently lowered. The Department had reduced it twenty feet below its original normal level. This, it was explained to the conference, was done because the Department considered the lake at its original level was a source of danger to the Wairoa Valley.

Now Lake Waikaremoana is held up by a huge landslide some three miles thick at its base. The lake has been there for some 2,000 years. Its age has been determined by carbon dating of the remains of the trees exposed by the falling water level. The people who tell us that this huge natural dam was unsafe are now preparing to hold back a similar lake at Benmore by an earth dam 1,250 feet thick at its base. The proposed Wanganui lake of more than 100 miles in length is to be held by a high earth dam at Parakino!

Indifference and Irresponsibility

The desolation and destruction of Lake Waikaremoana should open the eyes of every New Zealander (a) to the complete indifference of our hydro-electric engineers to scenic values, and (b) to the irresponsibility of Ministers of the Crown who allow such devastation to be brought about by a department under their control. Waikaremoana is an example not only to New Zealand but to the whole world of the desolation that can be expected from engineering enterprises which are not subject to control by conservation experts.

The Geyser Valley, Wairakei

Here again, in the interests of expediency, the Government decided to catch up on recurring electric power shortages by the development of geothermal steam. Many of my fellow countrymen will recall how the Ministry of Works moved in with bulldozers to creat an "operational area". They laid waste acres upon acres of the surrounding pine forests, piling the uprooted trees high in all directions. They created a vast area of devastation and a public eyesore. It seemed that an acre of land had to be cleared for each bag of cement to be stored!

Many members of the New Zealand public will recall the

assurances given years ago that the development at Wairakei could be accomplished without in any way impairing the sights of the world-famous Geyser Valley. New Zealand's thermal area is one of four such major areas in the entire world. The other three are at Yellowstone in the U.S.A., in Iceland, and in Alaska. The thermal region in New Zealand is considered by people who have seen one or more of the others to be the most wonderful of them all. It is certainly the most extensive. Thousands of people have journeyed half-way round the world during the past fifty years or so to see the Geyser Valley and the other sights of our thermal region.

In our ruthless quest for electric power, we of this generation of New Zealanders—the present guardians of this country—have almost completely destroyed the Geyser Valley. We have done so furthering a project, now over two years behind schedule, which has not been crowned with outstanding success. To the uninitiated a visit to the Geyser Valley at the present time could still be of some interest, but to those of us who knew it in former years it is now only a shadow of its former self. With the full development of the planned geothermal steam installation this famous place will entirely disappear.

Waiora Valley

Also destroyed, through being bulldozed out of existence by Ministry of Works engineers is the extraordinary but fascinatingly beautiful Waiora Valley. I have just heard that the wonderful thermal pool "The Devil's Eyeglass", which in the past has fascinated thousands upon thousands of travellers from both New Zealand and abroad, has been obliterated by a man with a bulldozer. This was done by order of the Ministry of Works, quite unnecessarily, to make way for a new access path to the steam bores.

Waiotapu

Having in mind the trials and the tribulations of the Wairakei project, one would have expected the Electricity Department to have made a certain success of Wairakei before embarking on similar projects further afield. But this is not so. Drilling for geothermal steam has already begun at Waiotapu, which place it seems must share the fate of Wairakei. Also on the list of the exploiters is Hell's Gate at Tikitere and no doubt as the public

becomes sufficiently conditioned they will make a start on Whaka. Pohutu Geyser will be a fine sight harnessed to a generating station.

Orakei Korako

Soon the gem of them all, Orakei Korako, on the banks of the Waikato River, will largely go under water with the filling of the Ohakuri dam late in 1960. Research instigated by the Department of Scientific and Industrial Research because of the impending doom of Orakei Korako indicates that here the Electricity Department is deliberately destroying the most concentrated area of thermal activity in New Zealand. At the Scenery Conference last November we were told by the Manager of the Electricity Department that Orakei Korako would not be destroyed. Apart from a few dirty pools and gurgling geysers (which incidentally includes the Devil's Mouth geyser with its terraces and unique species of hot water fern) nothing would be lost through the departmental activity!

In this statement it would seem the manager was relying on the fact that most people are ignorant of the "hot area" at Orakei Korako. Known only to the more intrepid and interested visitor, this area has never been opened up to the casual tourist and fully 90 per cent of it will soon be submerged and gone for ever. It was largely due to the inaccessibility of the place that Orakei Korako was not visited by more people and that the "hot area" was never opened up for the casual visitor. If Orakei Korako had been provided with proper road access twenty years ago, New Zealand could have had the greatest thermal "show piece" in the world. Its loss is a measure of the price we in this country are paying for our electricity.

"Spirit of Compromise"

At the Scenery Conference we were told by the Department's General Manager that we should approach these problems in a spirit of compromise. But it is noteworthy that the Department appears ignorant of the meaning of the word when furthering its plans for the exploitation of New Zealand's scenic attractions. A 20 ft lower level in Ohakuri Lake would have saved practically all of Orakei Korako for posterity, but obviously neither culture nor posterity has any value in the Department's plans.

In my opinion it is entirely wrong that the New Zealand

thermal area should be ravaged in this way without any consideration whatever for the non-material values inherent in these places, many of which are unique in the world. The Department at Wairakei is literally playing with Hell's Fire, but the tinkering with our thermal areas goes on apace.

The Aratiatia Rapids and Huka Falls

These two places enjoyed by hundreds of thousands of New Zealanders all the year round as well as by tourists visiting our country are being sacrificed on the altar of electric power. Their loss will help to produce barely 4½ per cent of the total *present* requirements of the North Island.

It was not definitely known that the Rapids were to be utilised for hydro power until the publication of the White Paper D4A in August 1958. Since then there has been widespread opposition to the scheme. Eight local and ten national bodies as well as a host of individuals have requested its stoppage. All 25 bodies represented at the Scenery Conference asked for this work to be stopped. The official reply to all these objectors was that the Rapids would not be harmed in any way. Without this station, moreover, the North Island would face a dire power shortage in the winter of 1964. Further official statements suggest that the power house and the Rapids may be able to be run together and so everyone will be happy.

These statements do not stand up to critical examination. As soon as the Waikato River is bypassed through underground tunnels to a power house the Aratiatia Rapids must cease to exist as such. No amount of assurances about not harming the Rapids can alter that fact. The Department talks about running water over the Rapids at specified times for the benefit of tourists, but cannot say when this will be done nor how much water will flow. They have been frequently asked for just this information, but it has not been given.

The Model

Because considerable public opposition had been voiced over a number of years to the possibility of this scheme going ahead, the Electricity Department prepared a model to show how the proposed powerhouse would fit into the landscape. Explanations and assurances were offered to the effect that development of the Rapids would not in any way interfere with their value as a

scenic attraction. It is proposed to build a dam sixteen feet high at the head of the Rapids and to incorporate them in the spillway of this dam. The entire flow of the river will be diverted through tunnels to the powerhouse downstream except at times for the benefit of sightseers. Then, we are told, water will be allowed to flow for brief periods down what used to be the Rapids. According to the White Paper D4A, while the water is being used for power generation, *the Rapids will be a series of deep pools.*

The Department's model of Aratiatia was constructed with the vertical scale exaggerated four times. This minimises the effects upon the surrounding landscape of all earth-moving activity such as roading, and dwarfs the dam in relation to its surroundings. Neither does this model show that the water backing up behind the dam will submerge the foot of the Huka Falls to a depth of at least eleven feet, and possibly fifteen feet. Nor has this fact been published in any of the official explanations concerning the scheme. In spite of all the official assurances no person has been able to find out the times during each day of the week when water is to be released, the volume of this water and the duration of its flow, nor what is to happen when there is a shortage of water in Lake Taupo as so often occurs. A hydro-electric scheme is meticulously designed at the project stage and if the assurances about non-interference with the scenic value of the rapids have any real value this information should be available to the public now.

I have drawn my figure of 11 to 15 feet from a study of the Lands and Survey Department's maps. These topographic maps show the elevation of the river at Huka Lodge, a mile upstream from the falls, at 1,150 feet, and at the top of the rapids where it is proposed to build the dam as 1,100 feet. The difference is 50 feet, and subtracting the combined height of the falls and gorge, which is approximately 47 feet there is a difference in elevation between the top of the rapids and the foot of the falls of about three feet. Now if you bank water up behind a dam at Aratiatia to a depth of 16 feet you must submerge 13 feet of the foot of the falls. The Lands and Survey maps are accurate to within two feet, so we may lose 11 feet or possibly 15 feet off the foot of the Huka Falls. Either way they will no longer be the wonderful sight they are today.

Information Withheld

It seems that throughout the formulation of these proposals concerning Aratiatia there has been a definite withholding of pertinent information from the public, particularly information detrimental to the Department's scheme. The determination to proceed with the Aratiatia development in spite of objections raised by the public stems primarily from two sources. The first arises from engineers' pipe-dream to "tame the Waikato River from Lake Taupo to the sea". The second derives from the almost complete panic in political circles at the thought of another power shortage in the North Island. There are people in high places who would sacrifice almost anything to avert a power shortage and Aratiatia is relatively cheaply and quickly built.

The controversy over Aratiatia and the Huka Falls developed in the daily press all over the country during 1959 following publication of my figures concerning the inundation of the foot of the Huka Falls. A Ministry of Works "spokesman" in Auckland admitted that up to three feet would be cut off the foot of the falls. The Minister of Works denied this in the House of Representatives. He assured Members that the scenic value of the Falls would be safeguarded at all costs and that only one foot would be submerged. Later, during the Scenery Conference, some delegates accepted an invitation to visit Gracefield and view the model. On their return to the conference I was informed that in conversation with the hydraulic engineers in charge of the model it had been learned that probably ten feet of the foot of the falls would be lost.

So now we have the facts! It is either 15 feet, 11 feet, 10 feet, 3 feet, or 1 foot. Which is it? They cannot all be correct. For my own part I prefer to rely on the figures culled from the Lands and Survey topographic maps. I shall therefore expect the falls to be completely spoiled by these works. It seems obvious that, whatever happens, the Huka Falls will not remain the awe-inspiring sight they are today, but will be reduced to a mere cataract at the end of the gorge.

Power and Water

As at first projected, the Aratiatia Station was to be a peak-load station of only 60,000 kilowatts, but this was later stepped up to 90,000. From calculations made for me it appears that to operate the Aratiatia Station at 90,000 kilowatts will require

nearly three times as much water as normally flows in the river. The extra water must come from storage either at the dam site or direct from Lake Taupo. If the Minister's statement that only one foot will be taken from the foot of the Huka Falls is correct then the storage behind the dam at Aratiatia will run the station at 90,000 kW output for about 15 minutes or at 45,000 kW for 30 minutes. If required for longer, then water must be released from Lake Taupo. If continued operation of Aratiatia at high output is required this could result in river levels between Lake Taupo and the Huka Falls rising above the highest recorded flood levels. And all this only to operate the power house without putting any water over the rapids for sightseers.

The effect of fluctuating water levels upon this beautiful stretch of the river and on the Huka Falls themselves will most certainly be detrimental. The river will cease to be a haven for fishermen and holidaymakers; it will become highly unsafe for the former, and bankside vegetation will be killed and scoured to such an extent that its scenic appeal to holidaymakers and tourists alike will be lost. With the periodic considerably increased water flow over the Huka Falls the falls themselves must suffer irretrievable damage as a scenic spectacle.

If the Government still believes that electricity can be generated at Aratiatia without interfering with the rapids then it should publish the relevant facts and figures to prove its contention. The Electricity Department is embarked on a project to cost the country £7,000,000, with the idea that the public can "have its cake"—the Rapids, and "eat it too"—the power station. The figures I have indicate that such a project cannot succeed, and that talk of keeping the Rapids as a scenic attraction is only a blind to keep public criticism quiet until this scheme is completed. Afterwards, we can be certain, there will be no end of excuses and counter excuses, assurances and counter-assurances from official sources to account for this regrettable mistake. The Government is not big enough to admit it has made a mistake at Aratiatia and in deference to public opinion call a halt to this work.

Herein lies an example of the difference between politics and statesmanship. Compromise between engineering and conservation is nearly always necessary, but there do occur individual cases in which public opinion demands the complete renunciation of

the use of water power in order to conserve unique phenomena of Nature. In such cases there can be no compromise. That stretch of the Waikato River from Lake Taupo to the foot of Aratiatia Rapids is one such case.

Earning Capacity of Aratiatia

On the economic side 4,989 overseas tourists visited New Zealand during the year ended 31 March 1958 and nearly all of them went to see Aratiatia. These people spent just over £3,400,000 in our country. Compared to this the earning capacity of a 90,000 kW power station at Aratiatia is only £88,452 per year. Under normal operating procedure a hydro station is not run at full capacity but generally at about 75 per cent of total load. The Aratiatia plant can therefore be rated for normal earning purposes at 67,500 kW. According to the *New Zealand Official Year Book* for 1958 the State Electricity Department produced 4,951,602,000 units of electrical energy during the preceding twelve months. This was sold to the consumers for £9,858,707. Each unit therefore cost .36 of a penny at its source —the power stations. At this figure the electricity produced at Aratiatia will be worth £10 2s. 6d. per hour, which amounts to £1,701 in one week or £88,452 in one year. The proposed Aratiatia station will, therefore, take 37 years to produce electricity worth £3,400,000, the amount spent by tourists in New Zealand in 1958!

If we assume that the rapids will be kept running for 12 hours per day for the enjoyment of tourists and sightseers (an occurrence which is very unlikely) then this power station will take 74 years to earn the same amount of revenue. This revenue, be it noted, will necessarily come out of New Zealanders' own pockets whereas that earned by the Rapids as part of a tourist circuit would come from overseas pockets.

Situation Full of Risk

One other aspect of the Aratiatia controversy calls for special attention. This station adds yet another link in a chain of hydro stations built on the Waikato River, with no alternative source of electricity in the North Island other than Waikaremoana. In a region such as the Waikato, which is geologically unstable, and in a country like New Zealand which is subject to severe earthquake movement, it would seem prudent to distribute hydro

stations over more than one river. The Aratiatia Station serves only to extend and perpetuate a situation full of great risk for the North Island. An earthquake or volcanic upheaval in the Waikato basin could suddenly interrupt the whole of its primary electricity supply. Far better to have played safer by leaving Aratiatia alone.

The Department's energies could be bent to constructing additional hydro stations along some of the other rivers already proved capable of development. The Government's White Paper D4A of 1958 and various schemes since publicised in the country's daily press show numerous alternative sources of power. In all they could supply more than 2,420,000 kW of electrical energy. Among these are the Motu and Mohaka Rivers. Others that might also be used are the Mokau, Waitara, Patea, Manawatu, Tauherenikau and Tukituki, to mention just a few.

Dams and Scenery

It is not necessary always to build high-level dams to provide good generation. Low-head power stations can be built just as successfully, though costing usually a little more for each unit of electricity. When the choice lies between a high dam and the loss of a valued scenic asset New Zealand should be prepared to pay the extra cost of low-level installations. Japan, which is a country rather similar to New Zealand, with many rivers and beautiful scenery, has an estimated maximum electrical potential of 20,000,000 kW in some 2,700 different localities. Of these, 1,049 localities have already been developed by the low head or "waterways system" as it is called. The electrical generation from these 1,049 stations amounts to 6,400,000 kW and it has been produced without destroying Japan's scenery to the extent already done or proposed to be done in New Zealand. The idea that electricity could be produced from the Mohaka River was suggested to the Electricity Department at a meeting of the Wellington Branch of the Royal Society of New Zealand in 1943. This meeting was addressed by the late Mr G. P. Anderson and I can well remember his remark, "We have never thought of the Mohaka as a source of power". Apparently they did not think very deeply about it for a long time afterwards. It was not until 1958, fifteen years later, that we find reference in the departmental reports to any investigations of the Mohaka River. This episode gives some measure of the lack of foresight in the Department's

operations, and of how official policy aimed at total utilisation of the Waikato River regardless of any other considerations.

The Aratiatia Rapids are unique in New Zealand—equal in loveliness and magnificence to any similar spectacle I have seen in other countries. The Huka Falls is our grandest waterfall, not our highest but our most impressive. Both these sights are readily available to travellers on the main North Island highway. In few parts of the world can people enjoy such spectacles with so little effort. That these sights should be interfered with is sheer folly, yet I can find no record whatsoever of this scheme having been given the slightest consideration from a conservation or scenic preservation point of view. Not even a vehicle counter was installed on either access road to ascertain the number of visitors to one or other place. Surely such a step should have been a prerequisite to any discussion of their future development as a power station site.

Fortunately the Huka Falls themselves, which in the original Waikato plan were scheduled for individual development, cannot at present be so used on account of subterranean steam beds beneath the falls and gorge. The case for total preservation in the public interest of Aratiatia and Huka is unassailable. And there existed before the work commenced several alternatives, if officialdom had cared to bestir itself.

Proposed "Beautification"

The conclusion that when this scheme at Aratiatia is finished New Zealand will have lost in greater part not only the Aratiatia Rapids but also the Huka Falls must be correct. As a kind of palliative to compensate for the destruction of the Rapids it is suggested officially that the whole area be landscaped and converted into a sort of grandiose Central Park, with lawns, spaced shrubs and trees. No doubt the head of the Rapids will be suitably marked by a bed of arum lilies!

We are given to understand that this is improving the scenery, but such artificiality is no substitute for the original natural scene. It represents a colossal waste of public money in an attempt to justify a bureaucratic obstinacy which proceeds with the destruction of a unique and priceless natural spectacle in the face of widespread public opposition. If the Electricity Department is anxious to demonstrate its ability to improve on our natural scenery let it begin by showing that it can restore those places

it has already despoiled. This would be better by far than embarking on further grandiose schemes of scenic obliteration.

I visited Aratiatia on 24 July 1960. The head of the rapids, with its islands and trees, is now changed beyond former recognition and the surrounding slopes, pushed about by bulldozers, are scarred and torn; the old tracks to the rapids are littered with pumice washed down from the bulldozed hills, the great pool by the look-out rock empty of water and choked with pumice and debris; the place is a shambles and bears that unmistakable evidence which we have come to recognise as the "trade mark" of the New Zealand Ministry of Works.

The Aratiatia Electric Power Station, when completed, will stand as a monument to political obduracy and bureaucratic irresponsibility in New Zealand. By being pushed ahead in spite of general public indignation and concern, Aratiatia represents the negation of democracy. It will also demonstrate to thinking New Zealand people why we desperately need some controlling authority, a Nature Conservancy, to save what still remains of our priceless natural heritage for generations of New Zealanders yet unborn.

The Waikato River Power Lakes

It has been claimed that the artificial lakes created in succession for power purposes along the Waikato River have enhanced the scenery of this area. But the mere filling of gorges with water does not necessarily add to their scenic appeal. There are many people who, in talking to me on these matters, lament the passing of the picturesque gorge at Atiamuri and its replacement with an uninteresting expanse of flat water. What is more important, however, is that no hydrobiological work whatever has been carried out by the Electricity Department on or around any of its lakes on the Waikato. Nothing has been done to maintain the stability of the reservoir banks or to restore the biological communities which have been destroyed, let alone to improve the scenic appeal.

A river with all its tributaries right up to their sources forms a vast drainage system for the valleys and plains through which the combined system flows. It controls groundwater levels upon which vegetation, over many millennia, has grown and become adapted. Groundwater levels influence the ability of soils to absorb excess water during prolonged heavy rain. Enormous quantities

Above: So great is the damage to our forests by introduced browsing animals that many people living today have never seen real, unharmed New Zealand bush with its luxuriant, almost impenetrable, undergrowth as shown in this photograph.

Below: After the deer and opossum have passed. This forest on the Haurangi Ranges, stripped of its protective undergrowth blanket, is on the way to extinction. The effects of excess water run-off after rain can result in only one thing—ruin through floods and landslides.

Above: "The Onset of Disaster". In the heart of the North Island's greatest remaining forest, in the Urewera Country behind Lake Waikaremoana, aerial photography reveals the scars of accelerated erosion induced by the ravages of introduced deer and opossum.

Below: Sheep, too many of them, brought about this heart-breaking scene in the mountain foothills of Canterbury. Unintelligent farming practices, allowing overgrazing of stock, bring about accelerated erosion which is ruining millions of acres of New Zealand high country and setting the stage for future disasters.

of water are involved in the percolation of underground waters which form the groundwater through the rocks, alluvium and sands of valleys and plains. The absolute volume in any particular river system is approximately equal to the annual discharge of the river at its mouth. But the movement of groundwater is slow, its rate depending on the type of material through which it is moving. For this reason the effect upon groundwater levels of interrupting the normal flow of rivers seldom becomes evident until many years after a dam has been built. In glaciated mountainous regions the effects usually show up more quickly—perhaps in 25 to 50 years.

Effects on Agriculture

Because the normal level of water in a river and the level of groundwater in the surrounding country are closely interdependent, whenever a dam is constructed across a river, changes in groundwater levels must occur. According to the construction of the dam and its spillways so must the groundwater levels of the surrounding landscape be more or less profoundly affected. With hydro-electric stations the amount of excavation of the river bed for the tail race is also of importance. Deeply excavated tail races built into power houses that are integral with dams have altered groundwater levels and brought very serious consequences to agricultural productivity in many parts of the world.

With high dams a rise in groundwater level upstream follows construction of the dam and generally there is a lowering of levels below the dam. This lowering may result in vertical erosion of the river bed which can lead to gradual drying up of the entire valley groundwater system. What follows is a slow dwindling of the agricultural productivity of the region. The damaging effects of lowered groundwater levels upon vegetation proceed for long periods before they are recognised. Surface soil moisture is largely influenced by groundwater levels and trees and plants draw much of their water supplies through the ground water system. As the level falls, plants cannot re-adjust to the changing conditions. Growth slows down and finally ceases in the larger types of plants. The end result is death and extinction, with replacement by vegetation tolerant of the new conditions.

This sequence may be seen today in the upper Rhine Valley in Europe. There the fine woodlands upstream from Freiburg have been replaced over large areas by bare gravel surfaces and

thornbush since the river was interfered with 150 years ago. The complete exploitation of the rivers north of the European Alps for hydro-electric purposes has brought about far-reaching changes in the much shorter space of 25 years. Losses in agricultural production have now reached such proportions that they now outweigh the previous increase in economic gains that arose from complete exploitation of the rivers for electricity production.

Ponding and Flooding

The development of a river under the maxim of "complete exploitation", as is being done on the Waikato River in New Zealand is often carried out so that the headwaters of one dam reach upstream to the tail race of the next. This results in the "ponding" of whole lengths of the river system, converting it into a system of stepped lakes. Such an arrangement destroys the drainage system of the river and results over the years in greatly raised groundwater levels which extend far afield through considerable areas of the landscape. Silting up of tributary streams with further consequent groundwater adjustments occurs in the side valleys, while below the lowest dam in the system there can be serious vertical erosion of the river bed.

The soils of the surrounding landscape upstream from the dams slowly become more saturated with groundwater. When heavy rain occurs these soils are incapable of absorbing and holding further large quantities of water so that the surplus from wet spells runs off more quickly. As the years go by the lower reaches of the valley are flooded with increasing severity. Later, due to the vertical erosion of groundwater levels below the dams agricultural production begins to fall. The first phase in this sequence is now developing in the Waikato basin. In recent years flooding has become more frequent and severe and the Ministry of Works is now embarking upon an expensive flood-escape works in the vicinity of Mercer. This is designed to hold the excess waters and let them go gradually after the peak of the flood has passed.

UTILISATION OF RIVERS FOR ELECTRIC POWER PRODUCTION

Sometimes with hydro-electric dams where groundwater levels rise considerably behind the works great water-pressure develops

in weak surfaces and along fractures of the subsoils and results in seepages of excess water into lower parts of the valley. This appears to be what is now happening below the Roxburgh power station on the Clutha River. An expensive scheme costing £1,365,000 is now to be undertaken below Balclutha to drain the rich delta agricultural lands of excess groundwater. It has accumulated there, souring the land, since the Roxburgh station was commissioned.

In New Zealand the projects to develop our river systems for electrical power are being executed as engineering works only, without any thought for conservation principles, for landscape design, or for the preservation or enhancement of scenic attractions. No thought is ever given to the possible long-term consequences of any scheme other than the production of electricity. Nor does any consideration seem to be given to the value of economic assets already in existence, such as farms that are to be lost or otherwise affected. The likely economic loss is not weighed against the probable economic gain of cheap electricity.

The "Sick Valley"

Apart from the physical consequences of fluctuating levels, a slowly falling level of groundwater in a valley system results in the development of what is called abroad "the sick valley." Desiccation of the soils through loss of percolating water affects microclimates in different sections of the valley. In the course of time this can affect quite seriously, even disastrously, the general climate of the region. Heavy rainfalls of catastrophic proportions become more common and the beneficial drizzling rains that normally extend over several days occur less frequently. As the affected areas of microclimates retreat further up towards the stream headwaters, the general change in major climatic conditions extends further afield and may even begin to affect more distant regions.

Hand in hand with the changing microclimates comes progressive degeneration of alluvial soils through the decay of soil structure. This is brought about by the disappearance of soil bacteria and other humus-forming organisms which are unable to tolerate the lowered soil humidity. In advanced stages of these processes soils may even dry out and crack. There is always some deterioration of soil fertility and loss of agricultural production.

In a country such as New Zealand which must always depend chiefly on agriculture for its economic well-being it is the height of folly to permit extensive interference with our rivers and lakes by engineers without the over-riding advice of conservation experts. The acceptance of such advice based upon the knowledge gained from scientific research in the sphere of conservation should be mandatory. The proposal to completely turn back the Waiau River into Lake Manapouri in furtherance of the aluminium smelting project in Southland is full of potential disaster for the lower Waiau Valley which is one of this country's finest blocks of agricultural land. Similarly the present proposals to divert the headwaters of the Wanganui and the Rangitikei Rivers into Lake Taupo for power generation open the way for violent fluctuations in the agricultural production of these two highly fertile river valleys.

New Zealand is not so well endowed with fertile soils that we can afford to squander them in this way. Our high agricultural production results not so much from high soil fertility as from highly efficient mechanised farming methods, abundant use of artificial fertilisers, and most important of all, our equitable climate with its regular and abundant rainfall. Compared with those of the great plains of North America and Europe our soils are for the most part of low fertility. Without our climate and regular rains we would not be a great agricultural community. Anyone doubting this has only to consider what happens to even our best farm lands after, say four to six weeks without rain.

THE WANGANUI RIVER PROPOSAL AT PARAKINO

Here the Electricity Department expects to submerge some of the North Island's richest alluvial flats, much of New Zealand's historic past, many settlements that by heredity belong to our Maori people and have been farmed by them for generations, and much scenery for which, in years, past, the Wanganui River was almost a byword in households here and abroad. Many families would be displaced from their farms by this 100 mile long artificial lake and the people of the city of Wanganui would live under the threat of a collapse of the 450 feet high *earth* dam it is proposed to build at Parakino to impound the waters of the river.

What the effects of this scheme would be on the groundwater

levels of the surrounding country is beyond conjecture at this stage. It is sufficient to say that in the present investigations being carried out into the feasibility of the scheme little if any thought is being given to this or any other aspect of conservation. Alive to the threat hanging over their homes and families and their livelihoods the people of the river have formed an association to protect their interests and to restore the tourist traffic on the river.

Creating Future Problems

Hydro-electric schemes such as that proposed at Parakino will, if carried through, create problems for the future which will far outweigh the problems we at present face in the destruction of our great scenic assets. Huge dams are not the only ways of using rivers to generate electricity. While it is only sensible that we should use our rivers and lakes for this purpose wherever suitable sites are available it is high time that we learned to do this by ways and means that will leave the fertility of our river valleys and plains and the beauty of our scenery unimpaired. Generations to come may have need of them.

I can see no reason why the Wanganui River could not be developed for electric power by a system of low dams or weirs. The total flow of the river at low head of water could be used. Possibly at the same time locks could be built, making the entire river system more navigable while preserving the famous scenic, historic and cultural sites that line the river banks.

Taking a broad view of the official proposal I cannot help coming to the conclusion that the scheme to turn the Wanganui River into a vast lake is designed primarily to obscure the damage that could result from a dwindling river after its headwaters were turned into the Waikato via Lakes Rotoaira and Taupo. This appears so particularly when one realises that the chain of Waikato power stations was designed to use more water than normally flows in the river. The acquisition of more water is becoming essential. Lake Taupo is not obligingly keeping full. Officialdom no doubt hopes that Wanganui citizens would be sufficiently satisfied with a great lake at their back door not to object to the disappearance northwards of the greater part of waters of their river.

THE SOUTH ISLAND LAKES

In the South Island one of the major activities of the Electricity Department has been and still is the raising of lake levels to obtain increased water storage. In theory this is an admirable idea, but in practice it can have disastrous effects not only on the scenic appeal of places so treated, but also upon the entire balance of nature throughout these areas.

To date the levels of Lakes Monowai, Pukaki, Tekapo and Hawea have been raised by amounts varying from 15 feet at Monowai to 75 feet at Hawea. By killing the lake-shore vegetation that is periodically submerged, fluctuating water levels bring about a tide mark of desolation which encircles the lake. When the level is high this is not apparent, but as the water is used and the storage level falls, the region of desolation is exposed to view. It is not necessary to raise a lake level by anything like 75 feet—nor even 15 feet—to create scenes of devastation and destruction. In North America the results of interfering with the levels of wooded lakes have shown that a rise of two feet, held more or less permanently, will kill shore-line trees. It creates a waterlogged substratum around their roots, thus preventing normal root respiration. Trees can be killed in a waterlogged soil even without water appearing above the ground surface. This is further evidence of the effects of groundwater levels upon vegetation.

Effects on Vegetation

The changed constitution of soil microfauna which results from a waterlogged condition can also have a profound effect upon vegetation. It brings about great changes on river flats and other low-lying areas bordering on new inundations. Areas at present under forest cover could quite easily be replaced, over a number of years, by rush bogs and other forms of swamp vegetation, due to these microfaunal changes in the soil.

Where lake waters are subject to wind and wave action, the lighter portions of shore-line trees killed by rises in the permanent water-level, break up and form a wide band of floating debris that obstructs the water's edge and piles up on beaches and inlets. The remaining parts of the trees, the trunks and heavier branches, persist below the surface, forming snags for pleasure craft and swimmers alike. Floating debris from a drowned forest will persist for from 50 to 200 years depending upon the amount of wave

action, the water temperature, and whether the shore line is of sand or rock. This decaying material tends to acidify the water and in small water bodies can produce sufficient acid to kill all animal life in the lake. That which sinks acidifies the lake bottom, creating intolerable conditions for many of the smaller forms of aquatic life. That which floats is a never ending source of annoyance to holiday-makers and permanent residents alike. It completely spoils a lakeside resort, not only by fouling the water's edge, but also by piling up on sandy beaches and covering them with unpleasant and unsightly litter.

Lake Monowai was the first of our lakes to be treated in this way. About thirty years ago the level was raised some fifteen feet to give additional water storage for electric power generation. Today the lake is an eyesore. Acres upon acres of dead and decaying trees stick forlornly out of waters which once had the living forest dipping into them. This scene of desolation periodically becomes intensified as the water storage is used up during dry spells. At these times Monowai becomes even more revolting, with acres of mud flats littered with forest remains also exposed to view.

Use of Lakes for Power

For power development in New Zealand the use of some lakes in this way for additional water storage is no doubt necessary. The selection of lakes to be so used should, however, be subject to the most detailed investigation from all points of view before any decision is made to interfere with their water levels. At present this is not the case and the State Electricity Department can take and use any lake it likes in any way it pleases. No reference need be made to any body versed in the principles or practice of conservation. Following Lake Hawea, other lakes listed for despoliation include Wanaka, Ohau, Manapouri, Te Anau, Hauroko, Poteriteri, Rotoiti and Rotoroa in the south and the Rotorua thermal lakes in the north. Truly it seems that when the Creator fashioned New Zealand He made all our lake levels too low and the State Electricity Department is now setting about correcting His mistakes!

It is often argued by engineers that lake levels are not static in any case, but vary, often quite considerably, during and after heavy rains. Lake Manapouri, for instance, will rise and fall as much as fifteen feet during such times. Why then should its level

not be raised permanently? The answer is that such natural fluctuations of level due to heavy rainstorms or the melting of winter snows are of short duration only, seldom lasting more than 7 to 14 days. Shore-line vegetation can withstand such temporary inundations, but similar rises in water level persisting for 3 to 4 months will start processes of death and decay which are irreversible. They will proceed to completion, according to the laws of Nature, in spite of any remedial attempts that may subsequently be made by man.

So it seems that man, in his mad quest for power, can destroy through unintelligent action that which Nature has taken many thousands of years to create. Nature being a hard master does not appreciate being tampered with in this way and "visiteth the sins of the fathers unto their children and their children's children". In this day and age it seems absurd that in the practice of engineering we cannot use our skill and brains to devise power projects without damage or destruction of our priceless scenic heritage.

Lake Pukaki has also had its level raised, and at times when the new storage level falls it presents a wide and ugly tide mark to the visitor. Being set amongst rocky mountains with little shore-line forest the desolation is not severe, but it could have been minimised by the clearing of shore-line vegetation, particularly clumps of trees, before the first filling. The small island which forms the focus for the familiar vista printed on the reverse side of the New Zealand five-pound note is spoilt for ever, the trees killed by inundation. When the lake level is low these dead trees serve to remind the traveller once again of the indifference of our engineers to scenic values. How simple it would have been to have removed them before raising the lake level.

At Lake Tekapo the beautiful picknicking spots and the old hotel so beloved and popular with travellers have gone for ever. In their place are dead and decaying trees sticking wretchedly out of the water as miserable reminders of happier days. No attempt was made here by the Electricity Department to clear away these remains before flooding commenced, or to reconstitute this once lovely spot afterwards. Even the remains of the old skating rink and resort buildings, together with the telephone poles, have been left half submerged. They will remain as eyesores until they mercifully decay and rot away.

me since indicate that the expected trail of desolation is following the raising of the waters to some 45 feet above normal. The full rise in level is to be 75 feet, but already miles of dirty mud flats and dying trees greet the traveller towards the head of the lake. Kidds Bush was only partly felled and incompletely burned before the waters rose and now it presents a sorry sight.

Unnecessary Havoc

What appalled me at Lake Hawea when I saw it before the completion of the works was the colossal amount of destruction at the lake outlet, the immense scarring of the surrounding countryside that went on in order to build this relatively small dam. The grassy wooded areas at the lake outlet which used to be so popular with campers, especially fishermen, had been bulldozed away and replaced with mountains of shingle and rocks. The construction camps had apparently been shifted three times to the accompaniment of extensive bulldozing and scarring. The whole place looked more like a battlefield than anything else.

I cannot believe this havoc was necessary, especially since in similar schemes I have seen abroad no comparable mess was allowed to develop. In Scotland for example I was surprised by the clean manner in which a hydro-electric construction I saw in 1951 was being carried out. With the raising of Hawea's level goes, of course, that wonderful beach extending for several miles right across the moraine at the end of the lake which was such an attraction to visitors.

THE MANAPOURI SCHEME

The present unsightly condition of Lake Monowai points to what can be expected to happen at Lakes Manapouri and Te Anau if the proposed scheme to produce power for an aluminium industry becomes an accomplished fact. Lake Manapouri and Lake Te Anau are the most beautiful lakes in New Zealand, in fact, two of the most beautiful in the world. I have seen many of the world's beauty spots and can endorse this oft expressed opinion without hesitation. Before these lakes are interfered with for any purpose whatsoever every possible alternative should be completely investigated and all the pros and cons of the situation carefully considered. But do we find this being done? Of course not. Once again the Electricity Department is setting about the

deliberate destruction of something which has no equal in New Zealand or anywhere else. Not only the scenery is at stake, but also the whole future of our National Parks. Furthermore, the implications of the proposed scheme are so wide that the future well-being of large agricultural areas stands to be profoundly affected.

It should not be thought for a minute that this idea emanated from Consolidated Zinc or that that company thought out the scheme. The whole project in its entirety is the child of the State Electricity Department in this country. It was taken over to Australia by our present Minister of Works and offered to the company. From this visit of the Minister eventually came the agreement between the New Zealand Government and the Consolidated Zinc Pty. Ltd., signed on 19 January 1960. Although the concession involves a New Zealand National Park, which according to our National Parks Act 1952 is under the control of the Minister of Lands, it should be noted that this agreement was signed on behalf of the Government of New Zealand by the Minister of Works. Under the National Parks legislation he had no authority to do so and the agreement has therefore been widely criticised as invalid. That Cabinet itself recognised it as invalid is suggested by a perusal of the document which contains a clause promising to validate it at the next session of Parliament. This sort of action, taken with blatant disregard for the Statute and relying upon Government majority in the House to legalise it, serves to highlight the smug autocracy of our present bureaucratic machine.

In the economic system of which New Zealand forms a part, industrialisation is important in increasing national wealth and raising living standards. An aluminium smelting industry in New Zealand could be of great benefit provided the price we have to pay for it is not too high. This whole project required careful study from both the engineering and conservation points of view, but judging from the agreement with the company it is painfully evident that once again the engineering aspect only is receiving proper and full investigation. I am convinced that in the process of creating this new industry there is grave danger that we shall destroy things for which we shall be very sorry later.

Four Questions

The Consolidated Zinc agreement has brought to the forefront

four immediate questions of the greatest importance to New Zealand. These are:

(1) The validity of an agreement entered into by Cabinet without the consent of Parliament.

(2) The violation of a New Zealand National Park through opening it to commercial exploitation by an overseas firm.

(3) The power, if any, which enables the Minister of Works in place of the Minister of Lands to sign away any portion of a New Zealand National Park for commercial or any other purposes.

(4) The principles to be applied for safeguarding scenic assets and natural resources in the face of commercial exploitation.

New Zealand is one of 44 countries in the world maintaining a national park system. It is also, as far as I can ascertain, the only country where an Executive could even contemplate, let alone carry through without authority from the Legislature, actions such as that taken by our Minister of Works. At a time when older, more experienced countries such as the U.S.A. are closing all commercial concessions in national parks, New Zealand, it seems, is to open up her national heritage for commercial exploitation. The precedent being set at Manapouri has tremendous implications for the future.

By this action the present Government makes a mockery of our National Parks legislation as it has already done with our Scenic Reserves and Domains Act by its action at Aratiatia. The people's trust in Government to safeguard its lawful rights and privileges in national wilderness areas has been woefully betrayed by both these actions.

The Manapouri Scheme

The favoured plan known as the Manapouri scheme involves, as I understand it, the building of a dam below the junction of the Mararoa and Waiau Rivers and the turning back of their entire flow into Lake Manapouri. The lake will be raised by upwards of 100 feet, linking it with Lake Te Anau, which will also be raised by some 25 ft. The combined waters of both lakes will then be taken to the sea in Doubtful Sound via an underground power house.

Under the terms of the agreement, the company is permitted both to raise and to lower the levels of both lakes, to cut timber and extract aggregate for their own use, and to do all things

essential to the industrial undertaking. They may in fact do almost anything they like within one of our national parks. The only protective requirement insisted upon is that the township of Te Anau may not be flooded under any circumstances. Experience in the U.S.A. has shown that concessions of this nature are both unworkable and disastrous to the national parks in which they operate. By 1958, when I was there, all such concessions in American national parks and monuments had been withdrawn, some at considerable expense in compensation.

Much publicity has been given to the clauses in this agreement purporting to safeguard the scenery of the region affected. The clauses published are merely pious expressions of hope and will be valueless in practice. They fall far short of what would be considered as the bare essentials from a conservation point of view. To hope or assert that the scenery of Lake Manapouri will not be harmed under the agreement is so much nonsense. Consolidated Zinc are not coming to New Zealand because of any altruistic interest in our scenery. They are coming here for cheap electric power and for profit. You cannot preserve scenery, nor enhance it, by submerging it beneath 100 feet of water.

The imminent destruction of the inlets, beaches, islands and forests of Manapouri and Te Anau by inundation is not a transitory affair in the course of our country's economic development. It is permanent. For our generation and for many generations to come it will be everlasting, and its effects will still be apparent 1000 years from now. In drawing up clauses for the preservation of scenery in such an agreement I should have expected the Government at least to consult the people who realise what would be required, namely the National Parks Authority and the Fiordland National Park Board. Neither of these bodies was consulted at all.

During the Scenery Conference of November 1959, when the question of the future use of Lakes Manapouri and Te Anau for power purposes was brought up, the Chairman, the Minister of Works, objected, saying it was too early to discuss the matter as nothing had happened there yet. At that time it seems fairly obvious that the Government was busy negotiating its agreement with the Consolidated Zinc Company. It is this sort of hedging, together with the withholding of pertinent information, the misleading statements and empty assurances, that is so frus-

trating to those New Zealanders who regard the preservation of our diminishing scenic heritage as a matter of national concern.

When placing the Manapouri-Te Anau Development Bill before Parliament on 29 June last, the Minister of Lands is reported to have said "he felt that all reasonable steps had been taken to ensure ample opportunity for interested people to make thir opinions known and to take some part in the discussions". I have no knowledge of when and where those opportunities occurred for, as I mentioned previously, at the request of the chairman, this matter was not discussed at the Scenery Preservation Conference of November 1959. It was officially stated at this conference that "every opportunity will be given to all people interested in the scenic resources of the southern end of the South Island to express their opinion before a decision is made as to whether the scheme shall go on or not". When and where have these opportunities been made available since this conference ended? Apparently in the Government's mind Lakes Manapouri and Te Anau belong to the people of Southland only. In my view they belong to the whole of the people of New Zealand.

The Future Prospect

Lake Ada and Lake Monowai today set the pattern for what we may expect in the future at Manapouri on a much vaster scale. Many thousands of acres of forest will be submerged, along with the greater part of the islands of Manapouri and the lower reaches of the Milford Track. All the fine beaches of both lakes will disappear. In dry periods the lake levels will fall to expose a wide and ugly tide mark of bare rock and dead vegetation. Provision is apparently made in the agreement for the removal of some forest that will be inundated, but how much or from where is not indicated.

Large trees not removed before submergence can be expected, according to recent research findings, to persist under water for at least 2,000 years. Those parts left above water will gradually decay and be planed off by wave action but should remain visible for 100 to 150 years. Their remains may be expected to foul the water's edge for upwards of 300 years. In all probability at least 300 years would elapse before inundated trees along the shore line died, fell, decayed, and were replaced by a new forest bordering the new lake shore.

It has been estimated that 18,000 acres of forest will be lost by

inundation in this scheme, but with the added effects of root waterlogging brought about by the rise in groundwater level the total may be nearer 30,000 acres. In the agreement the maximum area to be inundated is fixed at 5,000 acres, but this figure refers only to farmland and takes no account of the area of forest to be destroyed. The farmland lies between Te Anau and Manapouri and is largely that area which of recent years has been opened up by the Department of Lands.

The shore line of the two lakes extends for over 500 miles and the proposed inundation will kill vegetation along this distance for widths varying from about ten feet to four miles. It has been suggested from official quarters that "a few teams of bushmen could soon clean up these trees and make a new lake shore just as beautiful as before". Any attempt to clean up the inundated forest would require that all of every tree right down to the stump be completely removed either by burning on the spot after felling or by carting away. After removal of the trees the ground would have to be prepared as a new lake bed. This would involve a vast amount of earth-moving, and restoration of beaches at the new water level. As the lake rose to its new level, loose earth and stones and steep, water-saturated hillsides would slide in to the lake, leaving great scars along the shore line.

Forest Clearing Impossible.

By the very nature of the terrain round much of Manapouri and Te Anau the task of clearing and removing the forest would be almost impossible. Certainly it would be most costly and uneconomic. With the waters raised and the situation left to itself, decaying vegetation will sour the waters for upwards of 200 years. The beaches at present so characteristic of Manapouri will take upwards of 1,000 years to reform at the new level, provided that geological conditions after the flooding are suitable for their formation at all.

On the other side of the ledger, a lake with a fluctuating water level will still be there, the mountains will still be there, and some forest will still be there. Only a band of dead and decaying trees will remain along some 400 miles of the shore line as a gaunt and terrible reminder of the indifference of a state bureaucracy both to aesthetic values and to the normal human love for the bountiful beauty of natural wilderness.

Aluminium Profits Exaggerated

On the economic side, the Government claims that the aluminium enterprise will earn New Zealand £50,000,000 annually in overseas exchange; that 10,000 persons will be directly employed, and that many secondary benefits will accrue. Like all exploiters' estimates of economic gains to be derived from such undertakings, these figures appear to be greatly exaggerated. The overseas exchange earnings of the industry can only come from payments for labour performed by New Zealand workmen and the money to pay them must come from the sale of the processed aluminium on the world market. This aluminium will never belong to New Zealand but to the Consolidated Zinc Company, so that any profit in excess of payment for labour and other incidental charges will accrue to the company and not to this country.

If we estimate the average salary or wage of each person employed in the industry at £1,000 per year, which is a very reasonable figure under present New Zealand conditions, then the amount of overseas exchange earned under the heading of labour would amount to £10,000,000 a year. Income from the sale of electricity to the company is fixed in the agreement at £60,000 per year. The company is expressly excused from the payment of all forms of sales, excise and import taxation, so little revenue from taxes can be expected to accrue to New Zealand as a result of its operations.

The next major source of revenue will be port and harbour dues. The arrival and departure of eight ore-carrying ships a week, each of 10,000 tons gross register, should be sufficient to transport the necessary raw material for smelting. Taking the charges levied by the Wellington Harbour Board as a basis, we find that pilotage would amount to £920 per week, wharfage to £7,582 6s. 8d. and tonnage on cargo to £8,000. In one year these charges would amount to £1,750,273 6s. 8d. The total overseas receipts from the industry so far as New Zealand is concerned will amount on these figures to less than £12,000,000 a year, which is far short of the estimated £50,000,000. Even if the industry could employ 15,000 workers, this country's total earnings would still amount to much less than half the estimated £50,000,000.

As great stress has been laid upon the importance of the new industry as a provider of overseas exchange, the discrepancy between official estimates and the actual likely earnings revealed

by this analysis should be borne in mind when discussing the project. Furthermore, when the figure of £150,000,000 estimated as the capital cost is measured against the known capital costs of similar schemes it appears to be highly inflated. It is a mere guess as no detailed estimates of costs have as yet been prepared. Only a proportion of this sum will flow into New Zealand in payment for wages and services. At least 60 per cent will be spent in other countries in the purchase of plant and equipment. Under the agreement the balance of £60,000,000 will be spent in New Zealand over a period of twenty years—an average of only £3,000,000 a year.

Proposals Less Rosy

Analysed in this way the proposed industry does not appear quite so rosy. And we have to set against it the loss of a great scenic and recreational asset which under present plans will be utterly ruined. Aside altogether from the holiday benefits to be derived by New Zealand citizens from such places, Lakes Manapouri and Te Anau in their unspoiled state could help earn far more overseas exchange per year from tourism than the proposed aluminium industry. A properly organised tourist industry in all its ramifications could probably employ far more than 10,000 people.

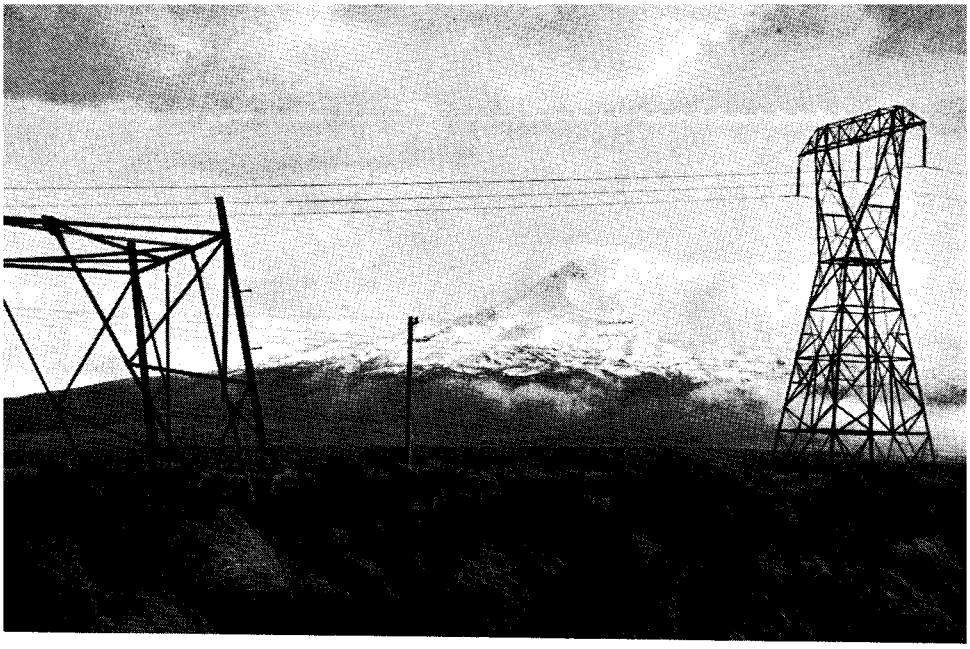
That an aluminium industry even at the figure of £12,000,000 profit a year would benefit New Zealand's economy is not open to doubt. If we liked to be sensible we could have both the industry and the unspoiled lakes as well. We have only to insist that the power potential of the lakes be developed in such ways that their water levels are not interfered with. This could be done, and done economically. As an engineering enterprise it would not, of course, be so spectacular as raising the lake level by 100 feet, but it would save these delightful lakes from the desolation so characteristic of hydro-electric works throughout New Zealand. They could then still be enjoyed for play and relaxation, while remaining a wilderness paradise for tourists.

Alternative Schemes

Several alternative schemes have been proposed, but one to me stands out as the most promising. This involves using the waters of Te Anau only, by diverting its outlet westwards from Middle Fiord to George Sound via an underground powerhouse.

Above: Indiscriminate, uncontrolled sawmilling wastes the asset it sets out to exploit and destroys the saplings and seedlings of the future forest. A scene from Westland which is a focus for accelerated erosion, for fire and future impoverishment, and a breeding ground for destructive insect pests.

Below: Dedicated to destruction, the New Zealand sawmiller goes his way, spoiling our scenery and leaving a trail of carnage and ruin. His philosophy —immediate profit with no thought for the future. Taking only the best from the forest he destroys the rest and any chance of regeneration.



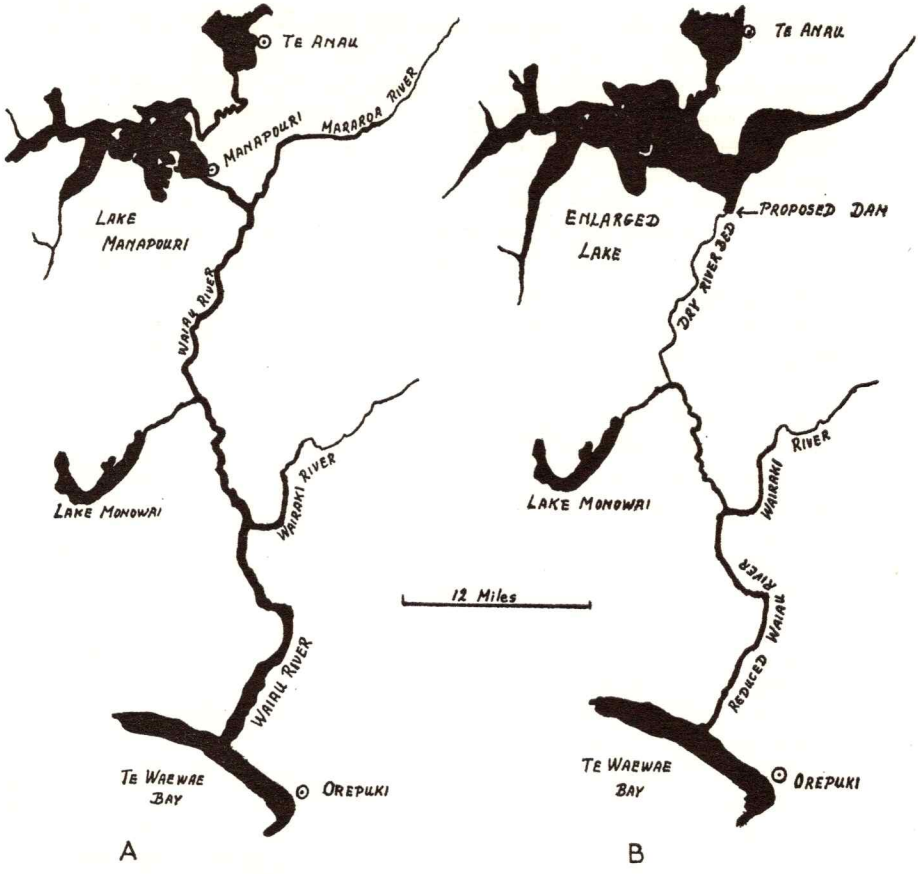
Above: Mount Ruapehu gleams through the morning mists, through two rows of power pylons and power lines, a telephone line with supporting poles, and the beginnings of a third row of power pylons —from the Desert Road, Tongariro National Park, July 1960.

Below: Crossed power and telephone poles might be a better future emblem for New Zealand than the silver fern. How many thousands of miles of ugliness confront the traveller on New Zealand roads? Would not some beech, rimu, pohutukawa, birch, oak or elm trees be more graceful and pleasing than these hideous poles?

Devised by the late Mr G. P. Anderson, one of the few hydro-electric engineers who has ever given any thought to the preservation of our scenery, this scheme would generate almost the same amount of power as the present State Electricity Department proposals. It has the merit that no raising of the Te Anau lake level is necessary and that it leaves Manapouri free to maintain the flow of the Waiau River. This would be diminished through the loss of the Te Anau water but not as much as under the present scheme. A heavy reduction in flow will have far-reaching implications as I shall show shortly. If further generation were still required this could be obtained by careful damming of the Waiau at selected points to use the river waters as they flow in their normal channel towards the sea.

The flooding of this great beauty spot with such calculated ruthlessness carries the hallmark of state-sponsored vandalism. But terrible as it is, it becomes secondary in importance beside the disastrous consequences which can stem from this scheme through interference with groundwater levels and water tables in the lower Waiau Valley. When the Waiau and Mararoa Rivers are turned back into Lake Manapouri, the Waiau watershed will be deprived of its major source of water and the river will consequently shrink. This will be followed inevitably by a fall in groundwater levels throughout the Waiau River basin and its tributary valleys, leading to a slow but continuous deterioration in the fertility of their highly productive soils. With the fall in the normal level of the Waiau many tributary streams could be left hanging, or partly hanging, and this would initiate a new cycle of erosion which would slowly travel upstream from each confluence into the mountains. The final effect of this could not be accurately foretold. If the phenomenon of the "sick valley" developed in the wake of the Manapouri hydro scheme it would be a greater disaster for New Zealand than the loss of the scenic values of the lake. A complete study of groundwater movements in the Waiau and tributary valleys should be undertaken before a start on the Manapouri scheme, as at present visualised, is sanctioned. Such studies are recognised as of vital importance in other countries, but their value has never been recognised in New Zealand.

During the 1959 financial year, according to Government statistics, the production of this region for the three major primary products only was valued as about £4,181,000. On a conservative



Schematic diagrams of Lake Manapouri and the Waiau River Valley as they are today (left) and their likely future state (right).

estimate a fall in production of 50 per cent due to deteriorating soils would mean an economic loss of £2,000,000. While an aluminium industry may employ a number of people these people must still be fed, and in spite of aluminium, primary production will remain in the foreseeable future New Zealand's main source of export income.

As our country's population grows, so there are more mouths

to feed, and the more important every acre of arable land becomes to us—if we wish to live well. Any engineering scheme which threatens agricultural areas with inundation or despoliation must be viewed with alarm and suspicion. Industry, though important, is not the only factor in this world contributing to the maintenance of high living standards.

Let us hope that still it is not too late for changes of plan in the case of Lakes Manapouri and Te Anau. Ways can be found of utilising their vast power potential while still preserving their unspoiled glory and maintaining the productive capacity of the lower Waiau Valley for the benefit of posterity. Let us hope that more knowledgeable counsels prevail.

THE KAITUNA SCHEME

There is another great area of scenic assets in the Rotorua district threatened by the Electricity Department in its quest for power. I refer to what has become known as the Kaituna scheme, which is a proposal to utilise the lakes of the thermal area for power generation. It involves the linking of these lakes by tunnels and races to make one large combined water system. Lake Tarawera will be passed into Lake Okataina and thence to Rotoiti.

At first sight this looks quite feasible, but here again reference to topographic maps immediately gives a clue to what is likely to happen. The level of Tarawera is 976 feet, that of Okataina is 1,014 feet, while Rotoiti is 913 feet. Now water will not run uphill from Tarawera to Okataina even for the Electricity Department unless it is pumped, which is absurd. So to make this scheme work the level of Lake Okataina must, of necessity, be lowered by at least 48 feet.

With its forest-clad surrounding hills and the bush dipping into the water, Lake Okataina is without doubt the scenic gem of the Rotorua lakes. It is the "Waikaremoana" of Rotorua. Because of its beauty it is visited by more than 20,000 people annually. The lowering of its water level by 48 feet would destroy completely the serene beauty of this delightful place. What other damage may ensue in other parts is not yet clear, but any development along the lines proposed must be closely watched by all who value the unique appeal of the Rotorua district.

LAKE TAUPO

When the proposals to control the level of Lake Taupo were first brought forward and approved, we were told by officials in the then Hydro-electric Section of the Public Works Department that this would solve the North Island's power problems for the next twenty years. How correct was this assertion, and how effective the control dam at the lake outlet in providing additional waters for power generation, can be judged from the recurring electricity shortages of the past eighteen years.

Results of Interference

From a conservation viewpoint the Electricity Department's interference with the level of Lake Taupo has been most damaging. The continually changing level has brought about the destruction of much of the shore-line waterweed. This formed the base of the food chain upon which all other life in the lake waters depended for sustenance. The results have been a continuing deterioration of the standard of trout taken from this world-famous spot, and a diminished number of aquatic insects emerging from the waters during summer and autumn.

The lowered standard of the fishing has been combated by allowing a continuous fishing season commencing from 1960 in an effort to reduce the fish population and thus make the available food supply go further. This could possibly result in the appearance once more of the extra large fish for which Taupo became famous in the past. But the measure, though quite commendable, does not remove the basic cause of the trouble, which arises from the continuing, often rapidly fluctuating lake level. This basic trouble could be cured, but would require some biological research and some funds. It seems to me that in cases like this, where a public amenity is seriously interfered with by the Department's actions, the Electricity Department's account should provide the necessary revenue for remedial action.

New Government Proposals

Having regard to the troubles of all kinds that occur at Taupo, not the least of which is the inundation of properties, it is surprising to learn that new departmental proposals are afoot to raise even further the normal level of Lake Taupo. These materialised apparently during 1956-57 and have been the subject of further surveys to ascertain what will happen if the lake level

is permanently raised a further 10-30 feet. It is to be hoped that this survey will be more accurate than the previous one, made before the present control measures were introduced. The proposal, too, should receive full consideration from all points of view before any attempt is made to implement it.

ASSURANCES FROM OFFICIAL SOURCES

We have assurances from time to time from official sources that this or that scheme will not damage this or that place. We had assurances about Lake Waikaremoana. Look at it now and consider their worth. We had assurances over the dam at Lake Taupo. In response to objections from local residents, a promise was made to build a lock into the dam. People were told they could still sail their boats along the upper reaches of the Waikato and into the lake. The lock is there, built into the dam in such a way that it is unusable. Such was the value of the assurance given to Taupo residents by the then Minister of Works that the dam would not interfere with their ability to navigate the river.

Today we again have assurances that the Aratiatia power scheme "will not in any way interfere with the scenic value of the rapids", and more recently assurances that the proposed development at Lakes Manapouri and Te Anau will not spoil the scenery of these wonderful places, but will actually preserve and enhance it! "The lakes will still be there" is the cry from official sources—as if a lake such as Manapouri is in the same category as a bathtub full of water! In the light of what has transpired with previous assurances, I cannot but wonder what value can be placed upon these latest effusions from political sources.

FOREST CONSERVATION

So far I have drawn attention to some of the major influences at work upon New Zealand's natural heritage: influences that are destroying the beauty of our natural environment without replacement by any man-made creation of equal merit. But other influences are also at work, perhaps less obvious, but nevertheless of great moment. The destruction of forests by deer, opossum and other introduced animals I have already mentioned. The accelerated erosion induced all over our landscape by the activities of these animals is well known, and the need for stopping it is well recognised by most people.

Research needed on Animal Problem

The only really safe solution to the browsing animal problem in this country is the extermination of these animals, but considerable doubt exists in scientific circles as to whether this is possible. If total extermination could be safely achieved using the poison 1080 there would seem to be no valid reason why such a campaign should not be proceeded with without further delay. However, at present there is insufficient knowledge about the action, hazards and after-effects of 1080 on food chains and other biological sequences to enable this substance to be utilised with confidence. What is really needed in New Zealand, and needed urgently, is an active policy of scientific research into this whole question of introduced animals, including population studies, studies of their habits, distribution, adaptability to New Zealand conditions, the nature of the damage they do in direct relation to their population densities, and means of combating or controlling this damage. It might well be that with adequate scientific knowledge made available from such an active research policy, methods of wild life management along lines similar to those adopted in other countries, where game animals are "managed" in wild lands, could be introduced into New Zealand in a system of regional control and give satisfaction both to conservationists and to those members of the community who enjoy hunting and shooting as a form of out-of-doors recreation. In the absence of adequate knowledge I am convinced, from my own observations, that the present number of these animals in New Zealand must be drastically reduced by whatever methods are available to us. The damage they do in watersheds and alpine regions at the present time points to a steadily increasing tide of economic loss of such magnitude that immediate remedial action is required. Considerable expenditure is warranted in the establishment of a major research unit. To be effective such a unit would require the full-time employment of at least 80 to 100 fully trained field biologists working from sensibly located field laboratories and provided with adequate funds and facilities. For the sake of the future economic well-being of New Zealand this problem must be faced; at present we are merely tinkering with it.

Experiments in extermination carried out on North Egmont by the ranger there have shown that our native forest can re-establish its undergrowth if these forest-damaging animals are

removed and kept out. The future solution of this problem may lie in total extermination throughout vulnerable regions with management by strict control elsewhere. Such a solution would be costly to operate, requiring permanent staff and recurring annual appropriations, whereas total extermination, if achieved, would put an end to Governmental expenditure under this heading and remove any possibility of a resurgence of this problem. It is in attacking and solving problems of this nature that a nature conservancy could well prove its worth in New Zealand.

Poisoning from the air has been outstandingly successful in combating the rabbit problem, which for a time assumed proportions bordering on disaster. I can well remember driving from Gore to Lumsden about 1945 when the rabbits formed a "guard of honour" on both sides of the road—in broad daylight—watching me go by quite unconcernedly. Behind Wanaka I have been in country where the ground was literally riddled with rabbit burrows.

Deer and Opossums

Turning to deer and opossum, I well remember the forest over and beyond Panikirikiri Bluff at Lake Waikaremoana. Before the war it was almost impenetrable and I often had to cut my way to make progress through the luxuriant undergrowth. By 1947, after the deer and opossum had been through, there was nothing of the undergrowth left except totara seedlings, which were apparently unpalatable to these animals. The forest floor was bare and a bus could be driven through it in many places. The destruction of our forest undergrowth like this is followed by death and decay of the entire forest canopy. Undergrowth forms a blanket for the boles and roots of the trees, which keeps them warm, moist and protected from wind. Remove it, and the forest cannot adapt itself to the new more rigorous conditions, so that in the normal course of events in Nature it succumbs. Introduced animals are operating in this way all over New Zealand, in our forests and high up on our mountains where they destroy the protective plant cover that prevents screes and steep slopes from slipping.

Practices Leading to Erosion

Everywhere one moves in the high country one observes the flagrant violation of conservation principles. There is over-

grazing, burning off of tussock and grasslands, the "mining" of timber resources through indiscriminate, uncontrolled and unintelligent sawmilling, the clearing of land without definite purpose. All are practices which finally lead to but one result—accelerated erosion and the loss of valuable farm as well as wilderness lands.

A short time ago I revisited an area of the Torlesse Range where twenty years previously I had tramped through tussocks up to my armpits. Now they are gone, or reduced to stumps dotted here and there. Acres of mountainside are on the move as vast areas of bare broken rocks devoid of any plant cover whatever slide downwards. All this is the result of the "mining" of the soil and vegetation by overgrazing with sheep. In this area of the Torlesse Mountains, as in so many other areas, conditions are ripe for the onset of catastrophic flooding and erosion. When it occurs it will exact an extremely high price for our past and present folly. The pity is that in New Zealand we already have much of the knowledge necessary to prevent or cure these ills, but through our political immaturity we appear incapable of utilising it.

Concerning the protection of watersheds, and utilisation of marginal lands from a conservation point of view, such areas are for the most part best protected by forest. Such forest can be utilised under sound forest management and it is interesting to note that in afforested country in New Zealand the yield for each employee in the paper pulping industry amounts to £5,000 per year, whereas the same land utilised for normal farming yields approximately £1,350 of produce per year for each person employed.

Modern forestry is essentially the application of conservation practices to the farming of trees. It has scarcely been applied in this country so far as our indigenous forests are concerned. In violent contrast to that of other countries, our present forest policy appears to aim at the elimination of native timbers and their replacement by exotics. In more enlightened countries the forester welcomes the public as visitors to his domain. Here in New Zealand the public is not welcome in State or private forests which are plastered with "Keep Out" or "Trespassers Prosecuted" notices. It is little wonder that the average New Zealander has little respect for forest as such and is just as likely to throw his cigarette butt into it as into the ashtray in his car. Very little attempt is ever made in this country to interpret our forest heri-

tage to the general public, or to explain its value in conservation. In this omission we are gravely in error.

We can never hope to get the full and interested co-operation of the public in forestry activities so long as we leave them in ignorance of its worth and meaning, and continue to treat them as undesirable animals in our forest reserves and plantations. In the U.S.A. it has long been recognised that the co-ordination of outdoor recreation with timber production is completely relevant to the sound practice of forestry. In that country such co-ordination is an essential part of any national forest administration. Under proper supervision and safeguards, recreational use of forest lands is quite compatible with timber production and watershed protection. During the year 1957, for example, 60,957,273 people visited the national forests of the U.S.A. enjoying the facilities provided for them by their Forest Service. In this way, more and more people are learning the value of forests and appreciating the necessity to protect them. Similar usage prevails in many parts of Europe. The Access to the Countryside Act of Britain provides for much freer legal use of the national heritage than can be enjoyed by any citizen of New Zealand.

LITTER, RUBBISH DISPOSAL AND VANDALISM

In travelling through the National Park System of the United States I was struck by the facilities, always provided and properly serviced, for rubbish disposal and for the normal biological functions of travellers. How lacking we are in New Zealand in both these matters. Rubbish disposal in our national parks is unheard of.

Mount Ruapehu in the vicinity of the Chateau skiing grounds is developing into one vast rubbish heap. Not only do we find there the litter of holiday-makers, but also the junk from broken-down chair-lifts tossed into ravines by people who should know better and who should be setting an example to the general public. It is high time that the Tongariro National Park Board set about cleaning up this area of Ruapehu and providing proper facilities for rubbish disposal. And servicing them. During January 1960 I noticed that public toilets had been erected at the end of the mountain road below the chair lift. Apparently, like the ostrich with its head in the sand, the Park Board felt that it had been the "good Samaritan" by erecting these facilities and left it at that.

The place had obviously not been serviced or cleaned for a very long time, possibly since its erection. My impressions of Ruapehu behind the Chateau were that it is rapidly becoming the National Rubbish Dump instead of a National Park.

When officialdom conveniently turns its back upon developing eyesores like this throughout New Zealand, and fails to provide appropriate facilities for recreation, it is little wonder that vandalism is a growing evil among certain sections of the community. In fact, taking the official attitude to our scenic attractions into account, it is remarkable that vandalism is not more rife than it actually is. Vandalism by individuals can be combated by education, but of what use can this be in the face of the vandalism by government agencies that is rampant throughout New Zealand. The time has long passed when both Government and local bodies "put their own houses in order", and set a good example to citizens in regard to this important question.

DESTRUCTION OF BEAUTY IN OUR RURAL LANDSCAPE

Any attempt to awaken this country to the widespread desecration of its heritage by Government and Government agencies is invariably greeted by responsible Ministers springing to the defence of their departmental heads. They should rather be requesting thorough investigation of the complaints with a view to rectification. We are assured by the Minister of this or that that our complaints are groundless and that every precaution is taken by departmental engineers to minimise scarring and preserve scenery. How hollow these assurances are can be seen by any person who bestirs himself and takes an intelligent look about. Consider the rows of power poles and pylons that are springing up all over the country with little if any thought for their unsightliness. One such system parallels the Desert Road leading north from Waiouru, two others cross Arthurs Pass and the Mackenzie Country, a fourth descends into Wellington City through Wilton's Bush and Central Park. In other parts of the world these things, along with telephone lines are not so blatantly evident as in New Zealand. They are kept largely out of sight by careful route-planning, by screening with trees, or by running underground.

Ugly Power Lines

The transmission lines which parallel the Desert Road form a virtual "power fence" between the traveller and the magnificent volcanoes in the Tongariro National Park. If they had to follow the road at all why could they not have been placed on the opposite side, where their effect, though bad enough, would not be nearly so objectionable? Instead these stand today as a monument to official lack of foresight and imagination.

Some weeks ago I visited a boyhood haunt of my own in the Manawatu—a road I used to enjoy cycling along. In those days it was partly lined by poplars and willows. Today the trees are gone and in their place run two rows of wooden poles, one on each side of the road, each row bearing three wires. Why one row of poles could not be saddled with six wires I do not know.

In Britain, Southern Germany, Switzerland and the U.S.A. I was surprised at the trouble so often taken to obscure transmission lines from view. In those countries lanes and highways are made beautiful with trees, whereas in New Zealand our roads are made ugly with barbed wire fences, power and telephone lines. In England a tree near a power line may have branches removed to clear the line, but it is only felled as a last resort. To the New Zealand power line engineer a tree is anathema. It must be cut down. Abroad they have a saying:

An oak tree takes 250 years to grow;
a broken power line
can be mended in an hour or so.

Roadworks and Scenery

We need roads and we need good roads in this country. Good roads of far better quality than any we have here are built by engineers in other lands without the destruction of forests, roadside verges and land contours that occurs in New Zealand. If this can be done overseas I see no reason why it cannot be done here.

During 1959 I visited the West Coast of the South Island and found one scenic reserve after another being grossly and quite unnecessarily mutilated in schemes for road improvements. This sort of thing is going on all over New Zealand. It appears that in order to build, straighten, or "upgrade" a road, a swathe from one to two chains wide has to be cut through the forest by bulldozers. I have seen fine trees of 60, 80 and 100 years of age ruth-

lessly knocked down and their remains piled in heaps alongside the roadways. There, mixed with mud and stones, they are left to decay. This pile of rubbish forms a dangerous and sometimes almost insuperable barrier in places to any person who wishes to enter the forest or reserves.

The final result of all this clearing is often a 40-foot wide strip of bitumen of poor quality and indifferent surface. The trees are removed because, we are told, they are dangerous to motor traffic. However, the rows of power and telephone poles that spring up on either edge of the road after the trees have gone are to my mind even more dangerous. To the passing motorist particularly, a hypnotic effect is produced by the continuous flicking past. In an accident, which is calculated to inflict the greater damage—a sturdy pole or soft resilient foliage?

Some years ago I journeyed down the coast among other things to visit a small but lovely reserve known as Fergusons Bush. The old road plunged into it between two fine kahikatea trees—a scene which had been much photographed and published. My mission was to record this in a colour photograph for a specific purpose. But the Ministry of Works had been there first. The fine old trees were gone; in fact it was almost impossible to locate where Fergusons Bush had been. The road now ran in a straight trench piled high on either side with the mutilated remains of the forest.

Last December I saw this process being repeated in other West Coast reserves and on the Rahu Saddle out from Inangahua. Now the Rahu Saddle, to my mind is quite a good road as it is. It is not difficult to drive and is beautiful, with the trees in places almost closing overhead as the road sweeps cleanly through the forest. The only drawback to this road is that like most other New Zealand roads in scenic places it is not sealed. It is my opinion that dust is one of the greatest road hazards and that far too much of the New Zealand motorists' money is spent on senseless upgrading and destruction of roadside verges and far too little on providing dustless sealed surfaces of good quality.

When one speaks about this wholesale destruction of forest to engineers and others concerned one invariably draws the reply "It all grows up again in a few years". But trees aged 80 or 100 years do not grow up again "in a few years". What does grow up along these road-works is a crop of weeds, bracken, and other rubbish.

How different these road works are to those I saw in 1958 in

the U.S.A. There roading engineers will often deviate a road line to preserve scenic assets and avoid the destruction of fine and interesting trees. Nor are their roadsides strewn with litter and rubbish left over from construction activities. New Zealanders who have travelled on the continent of Europe, in England, and in the eastern U.S.A. will recall with much pleasure, as I do, the beautiful wooded landscapes of their cultivated lands and the delightful tree-lined highways and byways.

Unattractive Cultivated Areas

How ugly by comparison are the cultivated lands of New Zealand, where scarcely a road exists that is not lined by telephone or power poles or both; where trees are conspicuous by their absence and when they do appear consist mostly of ugly pines or macrocarpa. Apart altogether from the possibilities of exotic trees of great beauty for shelter instead of pines—trees such as the birches, English beech and elms—there are many species of native New Zealand trees that lend themselves to shelter purposes. Trees such as the pittosporums, which include the native lemonwood and the karo, and the lacebarks, rimu, native beeches, the pohutukawa, titoki and puriri have all been proved capable of planting and growing for shelter or water conservation. If used in this way their lush but varied greens and brilliant flowers and berries would add character and beauty to our cultivated New Zealand landscape and to our roadsides.

The absence of trees and woodlands in the New Zealand landscape does not, I believe, stem from a lack of appreciation by individual landholders. Nor does it come from a lack of love of trees by our people generally. It arises from the realities of economics as enforced by the rapacious taxgathering bureaucracy whose vultures, until this year of grace 1960, descended upon all estates to extract the last penny in death duties. They even went to the length of valuing as standing timber ornamental trees in a deceased landholder's home garden.

The Arthurs Pass Route

During my recent visit to the West Coast I crossed from Canterbury via the Arthurs Pass road. Like others do who use this route I negotiated the numerous outcrops of rock, the boulders, washouts and loose stones that have been part of this road for as long as I can remember. In contrast to the earth moving and

forest destroying paraphernalia I was to meet later, the sole evidence of road maintenance in Arthurs Pass or the Otira Gorge was an old man, a very old man I should say, armed with a bicycle and a long handled shovel! As a road, to my mind, there is nothing wrong with the Arthurs Pass Road except that it is not sealed. It compares quite favourably in gradients and curvature with similar roads in other countries over which I have driven. All it needs is sealing.

I know it has been said that this road could not be sealed because of winter snows, but in other countries roads snowbound oftentimes in winter are sealed with bitumen. If there is no one in our Ministry of Works capable of doing it then it is high time an engineer was sent to Europe or the U.S.A. to learn the "know how". One thing I would emphasise is that, when the time eventually arrives for sealing or improvement of the Arthurs Pass highway, the National Park Board should uncompromisingly resist any attempt by the "bulldozer kings" of the Ministry of Works to despoil the vegetation along the verges. For here New Zealand possesses a scientific and botanical paradise and a tourist highway unique in the world. It is a treasure which, with the luxuriant vegetation that fringes the road, never ceases to evoke amazement and wonder in visitors from abroad.

The route is at present disfigured by power pylons of the Electricity Department and by two dilapidated rows of telephone poles, one of which appears to be no longer in use. The Arthurs Pass National Park Board should demand that where they interfere with the scenic value of the Park these lines be removed, either by shifting them elsewhere or by putting them underground.

Likewise, I trust that the people of Canterbury and the West Coast will see that the bulldozers already working on other sections are not allowed to spoil those glorious stretches of the Lewis Pass road over the summit and down through Maruia Springs. Apart from the laying of bitumen, these stretches should be preserved as they are for the enjoyment of travellers and as an example of the beauty of untrammelled New Zealand. If we do not, posterity as well as ourselves will be so much the poorer.

BEACHES THAT VANISH OR BECOME UNTENABLE

I have already referred (p. 24) to the delightful beach at Mana which has been obliterated for the sake of a railway diver-

sion. Both Wellington and Auckland cities have lost the free use of many beaches through pollution, yet in spite of public protest in the past the same kind of thing still occurs.

We have for instance the great underground deviation of the Hutt Valley sewerage system along the whole east side of Wellington Harbour to empty itself into Cook Strait. No doubt in the future the residents of the eastern bays will have cause to regret this scheme. People living in the area are likely to wake up after a strong southerly blow to find their beaches littered with the sewage of the Hutt Valley driven up the harbour during the storm. At the same time this extensive engineering feat has spoiled or obliterated beauty spots along the eastern harbour side enjoyed by many a hiker for the last 100 years or so. Despite protests from the people this work went ahead.

More recently we have had the spectacle of sewage from the new townships at Porirua being dumped into the lovely and popular bay at Titahi by the Ministry of Works. Waters of the bay are now often in a highly objectionable condition. Such a thing can only happen in New Zealand; it would not be tolerated in any other civilised country. The sewer should be moved. It should never have been put there in the first place.

Neither this nor the eastern harbour sewers need ever have been installed. Sewage, in more enlightened communities, is reclaimed and used as fertiliser on the land. Here is yet another example of the way we in New Zealand ignore conservation principles. By refusing to install sewage farms we are dumping into the sea a large measure of the fertility of our soils and violating one of the basic principles of nature—the nitrogen cycle.

SUGGESTED REMEDIES FOR THE NEW ZEALAND SITUATION

In the foregoing pages I have endeavoured to show the deplorable situation that has developed in this country regarding preservation and conservation practices. In combating both the autocratic attitudes and the ever-increasing destruction of scenic assets by state agencies it is quite proper that criticism should at first be levelled at those directly responsible. But in the long view the final responsibility in a democracy must rest with the public themselves as individuals.

Why? Because by neglecting their rights and duties as indi-

vidual members of a democratic community the public of New Zealand has allowed its Parliament to drift into a position almost of impotency. At the same time the growth has been fostered within the Public Service of bureaucracies such as the State Electricity Department and the Ministry of Works, which have armed themselves by statute and regulation with almost unlimited powers.

Public Opinion and Public Apathy

If we are to conserve our landscape and what remains of our scenic assets, an alert and mature public opinion is a necessity. There is a tendency generally in New Zealand to regard any proposal emanating from Government or from State Departments as being intrinsically good, whereas in fact many of these activities are based on political expediency. They will stand up neither to critical examination nor to the test of time. As a people we are insufficiently critical of government, too apathetic about what is going on around us. In the sphere of conservation, citizens are standing idly by while those things which constitute their nation's heritage are being systematically whittled away by an all-powerful State bureaucracy.

A Nature Conservancy

I have suggested on several occasions the setting up of a nature conservancy in New Zealand. This, in essence, should be a public body reporting to Parliament; not another government department or sub-department, but a body representative of conservation interests throughout New Zealand. It should be armed with statutory powers enabling it to enquire into all proposals likely to affect in any way the practice of conservation, the preservation of scenery and wildlife, and the recreational opportunities afforded by wilderness areas. All public works proposals should come before it.

A conservancy provided with statutory teeth could introduce conservation ideas into the bureaucratic machine and so help to balance the ledger. Such an administrative procedure would place upon Parliament the final responsibility for any decision as to what should be done with such places as Aratiatia and Lake Manapouri. At the same time it would bring these important matters into the light of public opinion. Irretrievable decisions could not be made, as at present, behind closed doors with the

public at large kept ignorant of what is happening. Such procedure might also help re-establish the authority of Parliament, elevating it from its present position of being a rubber stamp for the bureaucracy and a plaything of people with petty complaints.

Amendments to Acts

Before any form of conservancy could function at all, the present clauses in the National Parks Act, the Scenic Reserves and Domains Act and the Public Works Act, which place in the hands of Ministers of the Crown the power to interfere with national parks and scenic reserves, lakes and waterways, must be repealed. These powers must be transferred to Parliament in session. Apart altogether from the damage inflicted on our recreational areas by public servants through the authority of Ministers of the Crown, these repugnant clauses completely nullify the attempts of inspired, public-spirited citizens to establish scenic reserves or national parks.

Let us suppose some person spent most of his lifetime persuading, cajoling and begging the Government into reserving under the Reserves and Domains Act some particularly lovely spot, and finally succeeded in having a scenic reserve gazetted. His or her efforts can be rendered entirely of no account if at any time, for any reason, the Government decides in the name of "progress" that the reserve should be used for some other purpose. A Gazette notice from a Minister is all that is necessary. The person or persons have no redress. Their only possible remedy comes from an informed public opinion expressed through organised groups interested in conservation, wilderness experience, and the general out-of-doors.

In the case of the Electricity Department the powers it enjoys under the various sections of the Public Works Acts make such a Gazette notice unnecessary, or at best a formality attended to by a subordinate clerk. This is precisely what is happening at Aratiatia at the present time.

The clauses of the various acts to which I refer are Sections 16, 34, 97 and 98 of the Scenic Reserves and Domains Act 1953; Sections 7, 31, 32 and 59 of the National Parks Act 1952; Sections 13(a), 311 ad 312 of the Public Works Act 1928, No. 21. These clauses of the Works Act stem from the early days in New Zealand. Road and railway building was then a necessity for

the development of the country but was being resisted by large landholders who demanded extravagant prices for the land required. The government of the day took power consitutionally to acquire land for these two purposes upon payment of adequate compensation. Nowadays these clauses have been amended and turned to uses repugnant to decent-minded citizens; uses which bear little resemblance to the original purposes that called forth the legislation.

The need for such clauses is mostly long past, but even if it still exists the power should only be exercised through Parliament. Recently we saw how these clauses of the Works Act may be used to dispossess landholders of their lands for the benefit of a private industry, in this case an oil refinery. Nine landowners in the Matingarahi district on the west side of the Firth of Thames have been served with notice that their properties will be investigated in connection with this project.

Preservation in Perpetuity

We need written into our national park and scenic reserve legislation some clause similar to that in the United States Act. This provides for such places to be preserved in perpetuity and used in such ways that they shall be handed on unspoiled to future generations. Any change in status or any proposal for utilisation of such places should carry the prior approval of a nature conservancy before being enacted by Parliament.

The functions of a conservancy are not necessarily obstructive, rather are they constructive in that they look at each problem from all angles. Frequently, from such investigations new and better ideas emerge or more suitable alternatives are found than those originally proposed. A conservancy looks forward to the distant future and can take a broader view of problems related to natural resources than can those who are intimately concerned with their exploitation. Speaking at the Caracas Conference Dr John Berry, Director for Scotland for the Nature Conservancy, pointed out that close co-operation existed between the Conservancy and hydro-electric engineers in Britain and that this was working out exceedingly well. "The technical authorities have shown willingness to consider the biological point of view", he said. "It is thought that the social advantages of such schemes can be attained compatibly with the views of conservation."

Dr O. Murie, President of the Wilderness Society of the United

States, pointed out at the Caracas meeting that the principle of multilateral planning should be part of the professional engineering curriculum. He said, "We should insist on a thoroughly co-ordinated programme of public planning in which, by whatever administrative procedure, all interests shall participate".

To function properly a nature conservancy must be able to carry out scientific research into all aspects of conservation as required. Real progress stems only from acquired knowledge. This is as true in the field of conservation as in any other field of human endeavour. The solutions of the problems in conservation confronting New Zealand will not come from hastily conceived ideas or "hunches", but from properly directed and painstaking scientific research. For this reason a conservancy should be enabled, as in Britain, to establish its own research organisation and employ its own staff. In New Zealand it should have authority to call upon other State scientific departments such as the D.S.I.R and Department of Agriculture for assistance. Being based in this way upon scientific investigations, the deliberations and findings of a conservancy should, in my opinion, be guided by a scientifically minded chairman. It would seem appropriate that the chairman might be nominated by the Royal Society of New Zealand. This is the premier scientific society in this country and one of the bodies mentioned in the motion of the Travel and Holidays Association at the Scenery Conference in November 1959.

It is in the furtherance of these ideas and to give protection and planned use based on sound knowledge of all the factors involved that we desperately need some over-riding independent authority in New Zealand such as a nature conservancy.

Alternative Consequences

What is the alternative to establishment of such an authority and the implementation of sound conservation practices? It is the continued destruction of our wilderness areas and our great scenic spectacles by State agencies in search of new fields of activity whereby they may continue to perpetuate their existence and guarantee the employment of their staff. Considerations of self aggrandisement and perpetuation often take precedence in such cases over the national good. The ill effects of badly conceived engineering projects seldom make themselves evident during the

working life of the individuals concerned, who therefore give little thought to the requirements of posterity.

Falls in agricultural production must inevitably follow from several projects at present under construction or proposed by the Electricity Department in New Zealand. The ultimate result of further delay in putting conservation on a countrywide basis in New Zealand must be barren desolation over much of our high country. Resulting from accelerated erosion would be an increasing incidence of catastrophic flooding, making our riverside towns and cities more and more untenable, and the silting up of existing dams and reservoirs to the point of extinction. This in turn would render our hydro-electric stations inoperable and hence lower our productive capacity. A fall in living standards must follow.

If obliteration of the aesthetic and beautiful in our rural landscape continues, the materialistic outlook must triumph in this country. A people will emerge lacking in the cultural experience of wilderness and in appreciation of the importance of nature in man's existence.

These consequences are not pleasant to contemplate but whether the present trend of events is halted or accelerated depends entirely upon two things. One is the stand taken by each individual. The other is the readiness of the community as a whole to give expression to its feelings and requirements with sufficient force. Ministers of the Crown must be made to realise that they are the public's elected servants, responsible to the public for all the activities of departments under their control. Civil servants must be reminded that they are the public's paid servants and not their masters.

Let us all remember:

> *The wilderness areas of today and all that they include or imply in wild life, recreation, education and inspiration, are not ours to exploit and dispose of as we please, but that we have these things in trust and we shall have to account for them to all those who shall come after us.*

HERITAGE DESTROYED

The Crisis in Scenery Preservation in New Zealand

by J. T. Salmon

Citizens of New Zealand: Have you taken stock of your beautiful country lately? Have you checked the scenic assets that have already been destroyed, despoiled, or sadly depleted in beauty? Have you noted those that are now threatened with destruction by bulldozers or planned for "beautification" by concrete-mixers?

This is your heritage destroyed, despoiled and depleted: Orakei-Korako Thermal Area; Geyser Valley and Waiora Valley, Wairakei; Aratiatia Rapids (and Huka Falls); Lake Waikaremoana; Lake Tekapo; Lake Pukaki; Lake Hawea; Lake Monowai; acres of countless scenic reserves and forested areas laid waste by machines; hillsides washing down to the sea as a result of deer, opossums, and over-grazing; and mile upon mile of lovely landscape straddled by power pylons.

Next for the bulldozer? Rotorua Lakes; Tikitere Thermal Area; Waiotapu Thermal Area; Motu River; Tongariro River; Wanganui River Valley; Rangitikei River; Lake Wanaka; Lake Manapouri; Lake Te Anau; Waiau River Valley; Lake Hauroko; Lake Poteriteri; and any other beautiful place that is secretly marked down for a power station?

Whose country is this? Does New Zealand belong to you, to your children and your children's children? Or is this lovely land to be further bulldozed away on the instructions of government servants —your servants—without Parliamentary investigation or approval, without right of appeal or protest by any person or body? Is this your country, or does it belong to the Ministry of Works and the Electricity Department, to be carved apart as present legislation provides and bureaucratic power planning dictates?

New Zealand countryside is being bulldozed, concreted, dammed, power-poled, and eroded away—all in the course of a single generation, your generation. Can you stand silent as you watch your own precious HERITAGE DESTROYED?

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